

# **GROUND TRUTH SURVEY**

**SITE NO. I**

**MUNICIPAL AIRFIELD**

**LINDBERGH FIELD**

**SAN DIEGO CALIFORNIA**

STATINTL

SITE NUMBER I

Site Number I satisfied program requirements for an airport. It is located at the north end of San Diego Bay and is known as Lindbergh Field, San Diego's Municipal Airport. The airport is managed by Mr. D. A. Fern.

STATINTL

[redacted] Incorporated ground truth collection team consisted of [redacted] Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorologic, photographic, activity, and Munsell color data. Their basic equipment consisted of a [redacted] ground truth kit and communications equipment as described in the final project report.

STATINTL

Target sub-units monitored include the main 8100 foot runway, aprons, hangers, and support facilities. Primary activity is controlled by schedules of the major airlines using the field including American, Delta, Bonanza, and National Airlines. Light aircraft services are also available.

1-2

*BEST COPY*

*AVAILABLE*

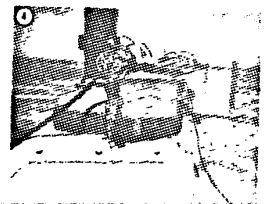
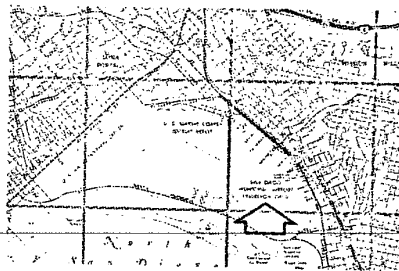
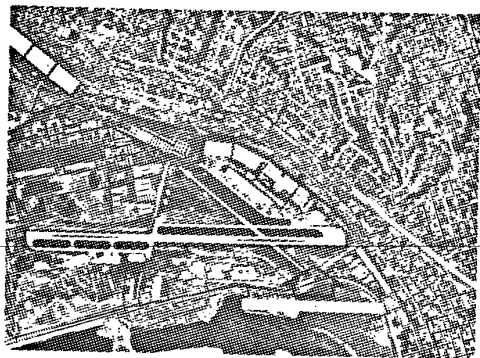
TEMPERATURE STATIONS

2017/12

Description

1	Soil
2	Grass cover
3	Concrete slab
4	Steel plate
5	Concrete pavement
6	Water surface (open)
7	Exposed rock
8	Cloud cover
9	Air

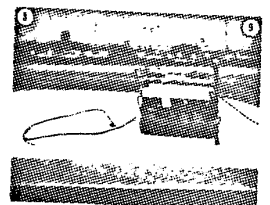
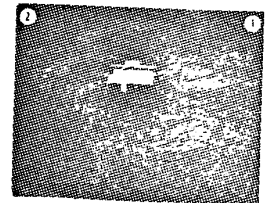
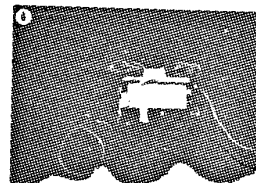
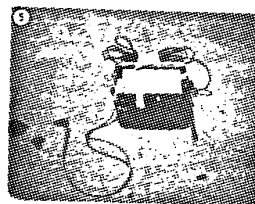
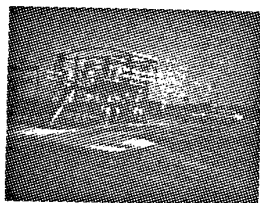
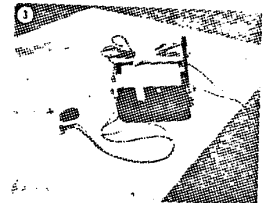
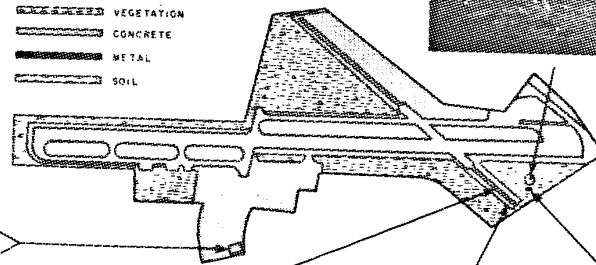


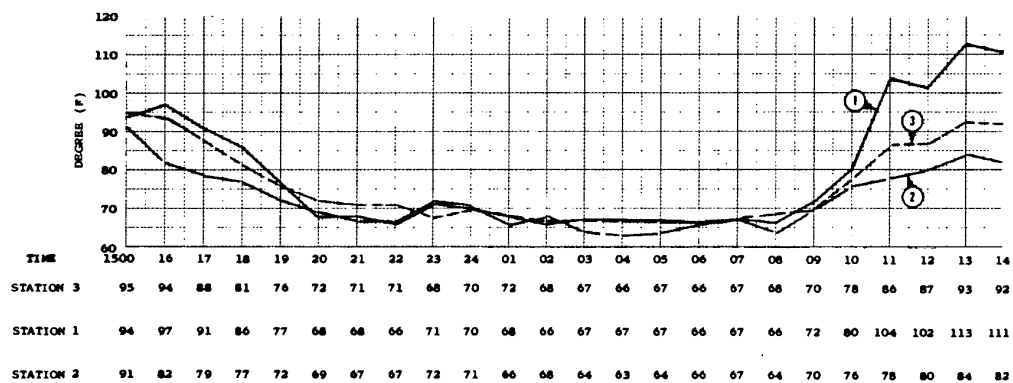
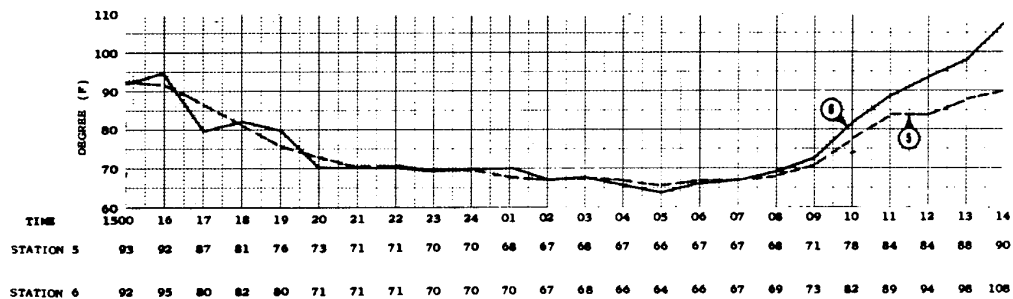
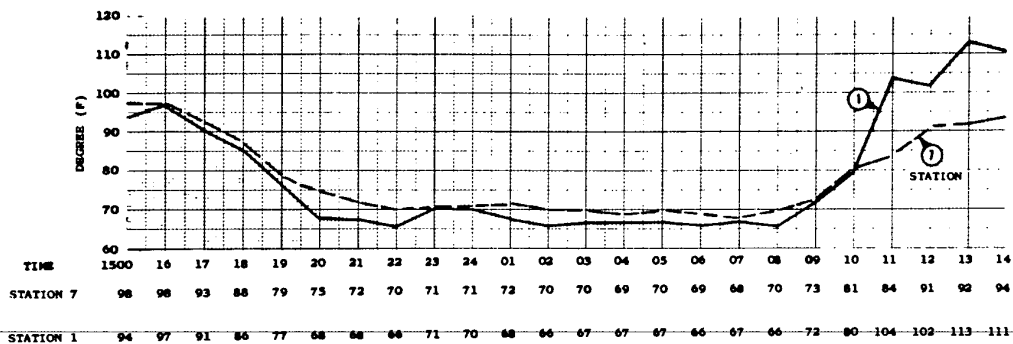


TEMPERATURE STATIONS  
LOCATION SHEET  
FIRST SURFACE MAP

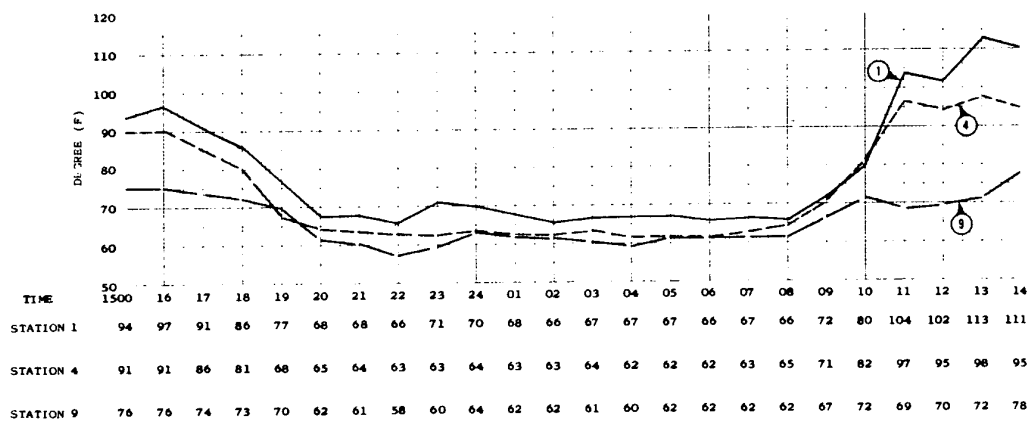
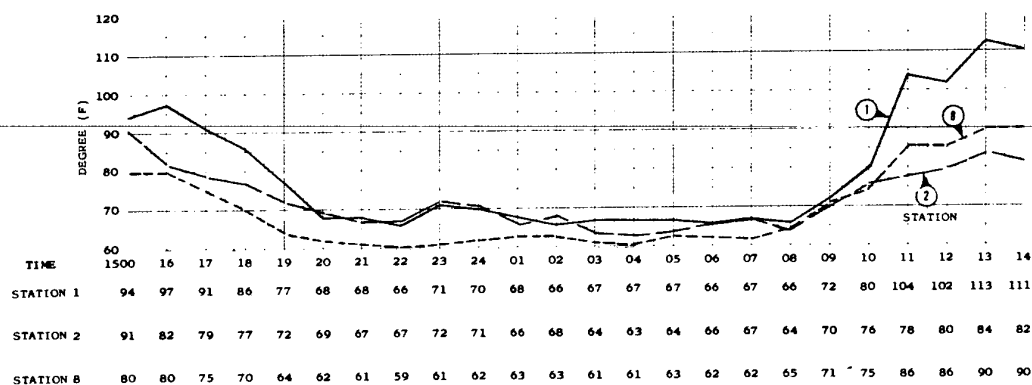
LEGEND

- BLACK TOP
- VEGETATION
- CONCRETE
- METAL
- SOIL





## 24 HOUR TEMPERATURE DATA



## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 6/26/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1300	113	84	93	98	88	98	92	80	72
		1400	111	82	92	95	90	108	94	90	78
FLIGHT NO. 2 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		0015	61	61	68	60	69	67	66	59	59
		0010	61	59	89	W	4	10/10	10	STRATUS	750
FLIGHT NO. 3 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1400	112	86	104	92	105	112	102	90	74
		1500	109	90	104	90	104	112	90	86	75
FLIGHT NO. 4 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2100	68	70	69	61	69	70	73	62	62
		2200	67	66	68	61	68	68	72	64	61
FLIGHT NO. 5 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1000	90	82	90	104	86	92	83	85	74
		1100	98	84	92	109	92	102	92	85	75
FLIGHT NO. 6 6/28-29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2300	64	66	66	59	66	67	69	57	60
		2400	63	62	65	58	65	65	66	55	59
FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1100	96	80	95	109	96	105	96	91	74
		1200	110	80	103	100	100	112	103	89	75
FLIGHT NO. 8 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2200	66	68	67	60	68	68	73	58	61
		2300	65	64	65	59	65	65	65	56	59

FLIGHT NO. 1 6/26/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1300	113	84	93	98	88	98	92	80	72
		1400	111	82	92	95	90	108	94	90	78
FLIGHT NO. 2 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		0015	61	61	68	60	69	67	66	59	59
		0010	61	59	89	W	4	10/10	10	STRATUS	750
FLIGHT NO. 3 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1400	112	86	104	92	105	112	102	90	74
		1500	109	90	104	90	104	112	90	86	75
FLIGHT NO. 4 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2100	68	70	69	61	69	70	73	62	62
		2200	67	66	68	61	68	68	72	64	61
FLIGHT NO. 5 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1000	90	82	90	104	86	92	83	85	74
		1100	98	84	92	109	92	102	92	85	75
FLIGHT NO. 6 6/28-29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2300	64	66	66	59	66	67	69	57	60
		2400	63	62	65	58	65	65	66	55	59
FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1100	96	80	95	109	96	105	96	91	74
		1200	110	80	103	100	100	112	103	89	75
FLIGHT NO. 8 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2200	66	68	67	60	68	68	73	58	61
		2300	65	64	65	59	65	65	65	56	59

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 9 6/30/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1300	102	84	103	102	102	111	102	86	75
		1400	112	89	103	98	98	109	103	86	76
FLIGHT NO. 10 7/1/64	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.			
		1300	72.5	61	51	WNW 13	0/10	20			
		1400	72.5	63	59	WNW 13	0/10	20			
FLIGHT NO. 11 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2400	64	70	68	60	66	66	64	57	61
		0100	62	64	66	57	66	66	68	56	59
FLIGHT NO. 12 7/1/64	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE	
		0005	62	60	89	NNW 6	6/10	8	STRATUS	900	
		0100	61.5	59.5	89	WNW 1	0/10	8	STRATUS	900	
FLIGHT NO. 13 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1400	116	92	92	84	94	103	104	78	79
		1500	111	90	102	91	102	112	106	89	77
FLIGHT NO. 14 7/3/64	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.			
		1400	75	62	47	NW 14	0/10	15			
		1500	75	62	47	NW 14	0/10	15			
FLIGHT NO. 15 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		0300	59	68	64	58	64	64	64	56	59
		0300	61.5	59.5	89	NE 5	10/10	3P	600		
FLIGHT NO. 16 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		1430	108	82					94	80	75
		1430	73	64.5	63	WNW 13	0/10	15			
FLIGHT NO. 17 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9
		2130	68	70	71	69	71	72	71	59	63
		2130	62.5	54	58	NW 6	1/10	8	1200		

## 360° PANORAMIC



NORTH

EAST

PHOTOGRAPHS TAKEN FROM THE  
GROUND TRUTH STATION

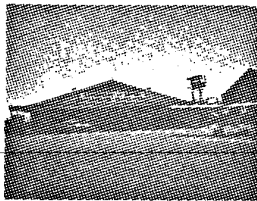


SOUTH

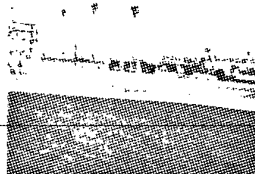
WEST

- A. Very little daily activity was observed in and around the immigration building.
- B. Fuel was stored in four underground tanks with a 20,000 gallon capacity, each covered by 24 in. of gravel and 12 in. of concrete.
- C. Monday, 6/29/64, work crew on main runway apron NW of GROUND TRUTH STATION
- D. Monday, 6/29/64, 11:55 PDT United flight J-103 arriving.
- E. Monday, 6/29/64, 12:55 PDT Western flight 414 arriving.
- F. Saturday, 6/27/64, 15:00 PDT PSA flight 144/566 arriving.
- G. One or two USCG planes departed daily approximately 9:45 PDT.
- H. USCG planes returning to base at 11:50 PDT. Note Coast Guard used taxi strip crossing North Harbor Drive and Lindbergh Field perimeter road to obtain access to runway.
- I. Unusual activity Tuesday, 6/30/64, 13:40 PDT. Two USCG planes and one USCG helicopter leave Lindbergh Field.
- J. Same aircraft and time as in Photo 1.
- K. Monday, 6/29/64, 11:45 PDT Private aircraft leaving field. PSA flight 106 and Western flight J-700 in terminal area.
- L. Beginning of perimeter road heading south, on left is auto parking area, on right is passenger loading ramp.

## ACTIVITY LOG



A



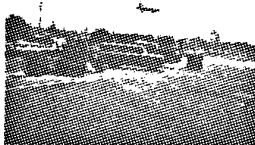
B



C



D



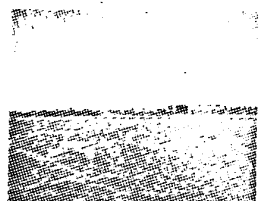
E



F



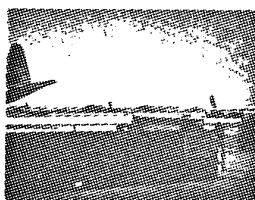
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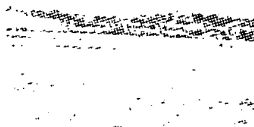
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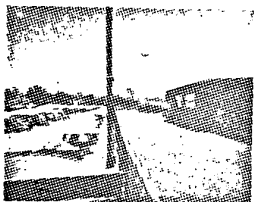
I



J



K



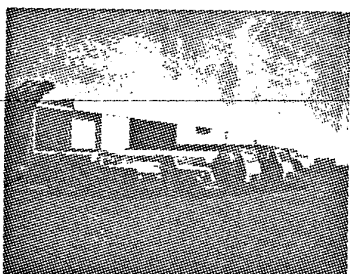
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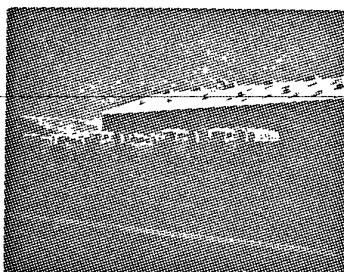
Activity Log

- A. Fisher A/C - Chevron trucks
- B. PSA Hangar - Shell trucks
- C. June 28th, 1130, PSA hangar  
for electric maintenance and  
repair
- D. Same as C at night - interior  
photos
- E. Same as C at night - interior  
photos
- F. Same as C at night - interior  
photos

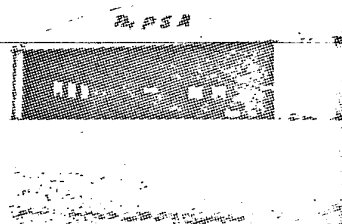
## ACTIVITY LOG



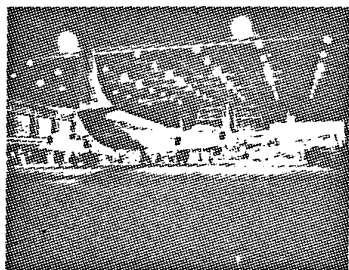
A



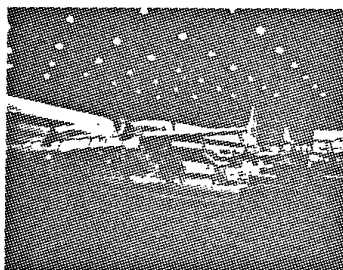
B



C



D



E



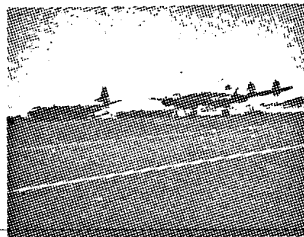
F

- A. Charter planes - marine troops
- B. Charter planes - marine troops
- C. American & United Airlines - freight storage
- D. Air freight - load and unloading - mostly cut flowers
- E. Entrance to airport parking lot
- F. Parking meters and taxi stand at main entrance
- G. Freight loading of cut flowers
- H. Delivery of casket
- I. Delivery of casket

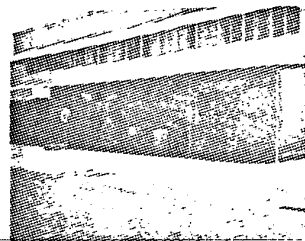
## SITE PHOTOGRAPHY



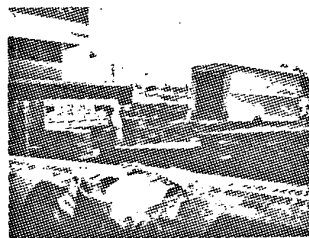
A



B



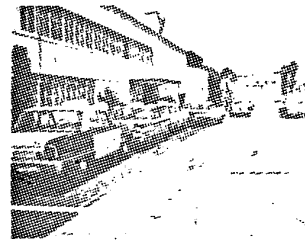
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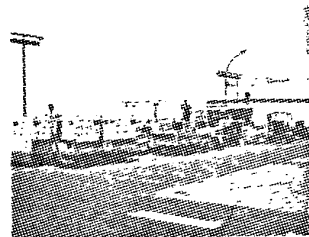
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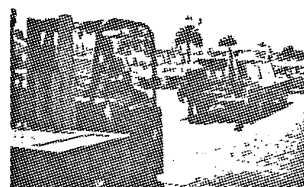
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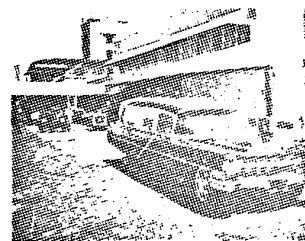
F



G



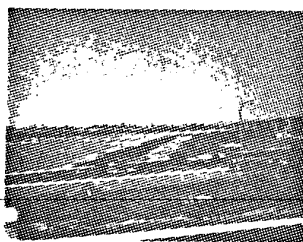
H



I

- A. West side of Lindbergh Field - Palm Trees lining road -  
note appearance on IR
- B. South side of Field - same as A
- C. Tarred area around drain along access road SW of  
runway approximately 100 yards apart. Total of 10 spots.
- D. Road W of site #1, View + NE - July 26, 1964 - 13:40 PDT  
Butane storage tank on right
- E. Close up of grass and bare soil
- F. Close up of soil. Note Calcareous shells in loose  
unconsolidated sand and silt.
- G. 4" high grass

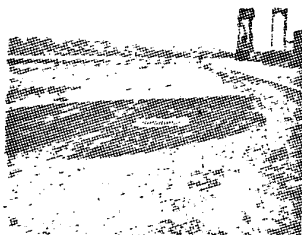
## SITE PHOTOGRAPHY



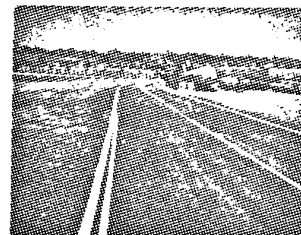
A



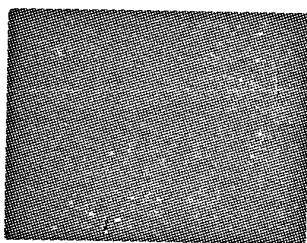
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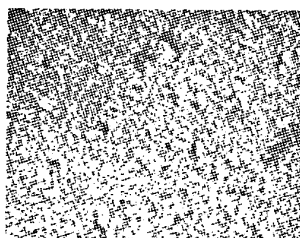
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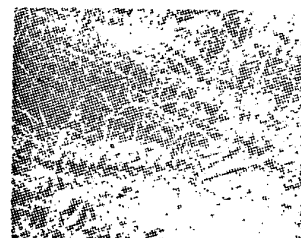
D



E



F



G

## UNCALIBRATED RADIOMETRIC DATA\*

## SITE #1

Temperature Station	Thermodynamic Temperature (T <sub>T</sub> )	Radiometric Temperature (T <sub>R</sub> )	Relative EMISSIVITY (E <sub>R</sub> )**		SUNRISE & SUNSET (PDT)		
1 Sandy Soil	40.0 °C	36.0 °C	0.949		JUNE	SUNRISE	SUNSET
2 Grass Cover	34.0	25.0	0.889				
3 Concrete Walk	38.0	32.0	0.925				
4 Aluminum Painted Box	34.0	25.0	0.889				
5 Concrete Runway	38.0	33.0	0.937	24		5:42	8:00
12 Asphalt Runway	42.0	36.0	0.962	25		5:42	8:00
				26		5:42	8:00
				27		5:43	8:01
				28		5:43	8:01
				29		5:43	8:01
				30		5:44	8:01
NOTE: The next readings were taken with an uncooled rod.							
1 Sandy Soil	45.5	43.0	0.968		JULY	SUNRISE	SUNSET
3 Concrete Slab	38.0	34.0	0.949				
4 Aluminum Painted Box	41.0	31.0	0.878				
5 Concrete Runway	37.0	34.5	0.968				
7 Concrete Apron				1		5:44	8:01
Fuel Storage	39.0	36.0	0.960	2		5:45	8:00
8 Light Blue Car Top	31.5	31.5	1.000	3		5:45	8:00
12 Asphalt Runway	43.5	38.0	0.933	4		5:45	8:00
-- Resolution Target	58.0	48.0	0.885				

NOTE: The next readings were taken with an uncooled rod.

\*\*  $E_R = \frac{T_R^4}{T_T^4}$ ; where  $T_R$  = Radiometric Temperature  
 $T_T$  = Thermodynamic Temperature

\* Radiometric data were collected by a Stoll-Hardy Model HL 4 unfiltered radiometer with a 3-25 micron response. They are in error by an unknown amount due to reflected solar energy; therefore, the emissivity values have relative merit only.

# GROUND TRUTH SURVEY

SITE NO. II

RAILROAD

SANTA FE RAILWAY

SAN DIEGO CALIFORNIA



STATINTL

STATINTL

SITE NUMBER II

Site Number II satisfied program requirements as a railroad marshalling yard, round house and freight loading area. The site is located parallel to U. S. 101 drive, near Sigsbee Street, San Diego, California. The area is under the control of the Santa Fe Railway Company; [redacted] Chief Clerk.

STAT

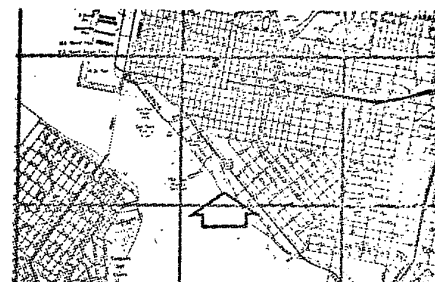
[redacted] ground truth collection team consisted of [redacted]. Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorologic, photographic, activity, and Munsell color data. Their basic equipment consisted of a [redacted] Ground Truth Kit and communications equipment as described in final project report.

Target sub-unit monitored include box, open and refrigerator cars, diesel electric engines and open equipment storage. The freight yards were most active between 1800 to 0200 hours.

STATINTL



TEMPERATURE STATIONS  
LOCATION SHEET  
FIRST SURFACE MAP

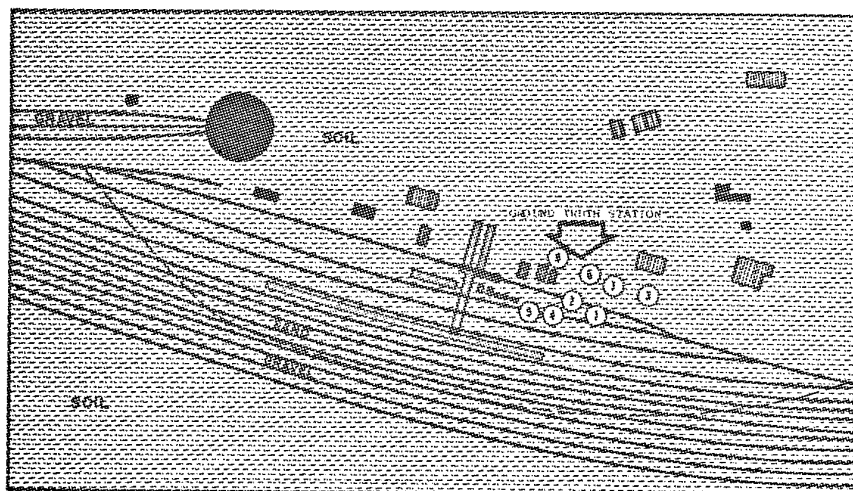


RAILWAY YARD - SITE II

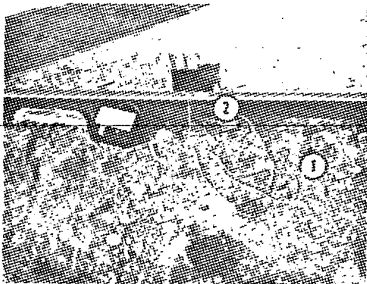
STATION NO.	DESCRIPTION
1	Railroad Bed (ground)
2	Railway Track (steel)
3	Ground
4	Top of Dull Colored Railway Car
5	Top of Bright Colored Railway Car
6	Lumber Pile
7	Rusty Scrap Metal
8	Top of Shed (lumber, metal)

LEGEND

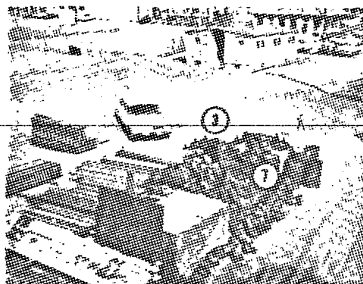
	BLACK TOP
	METAL
	WOOD
	SOIL



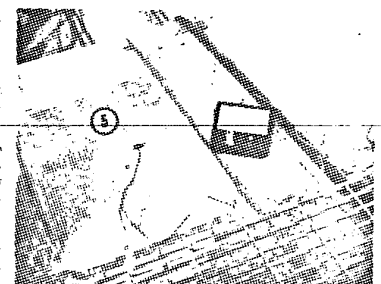
## TEMPERATURE STATION IDENTIFICATION



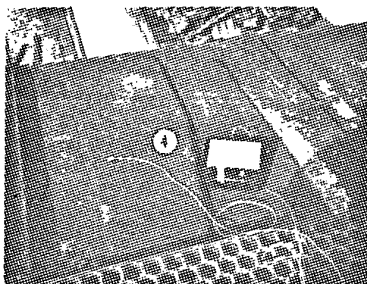
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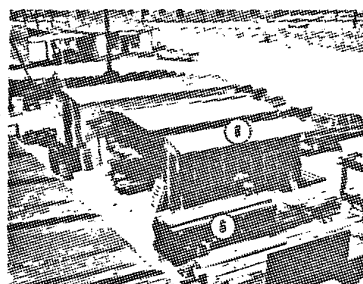
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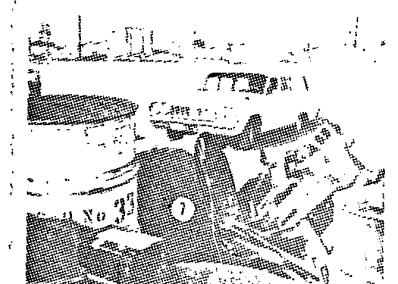
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D



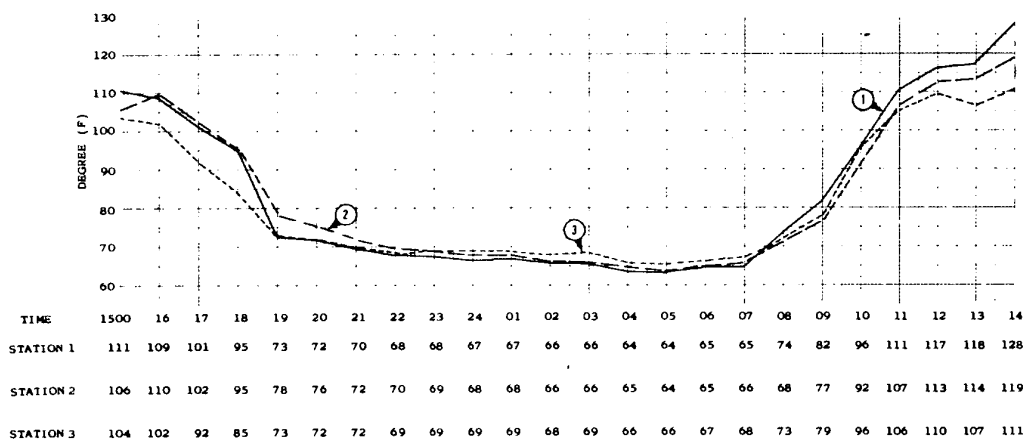
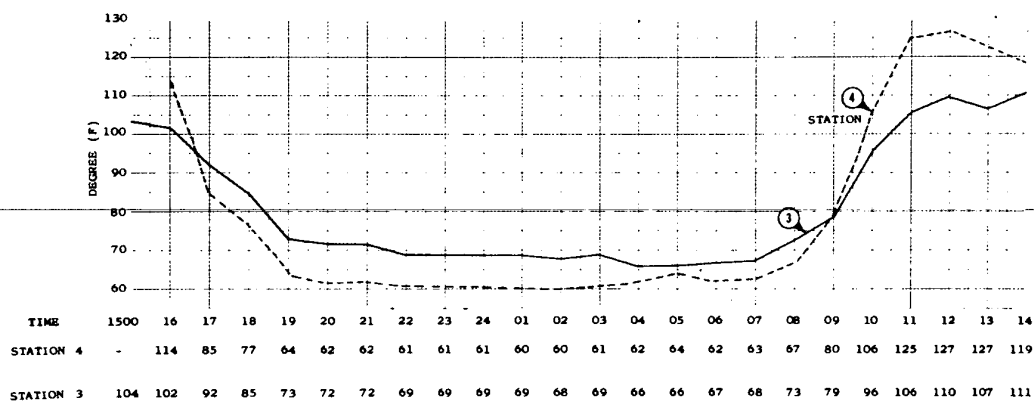
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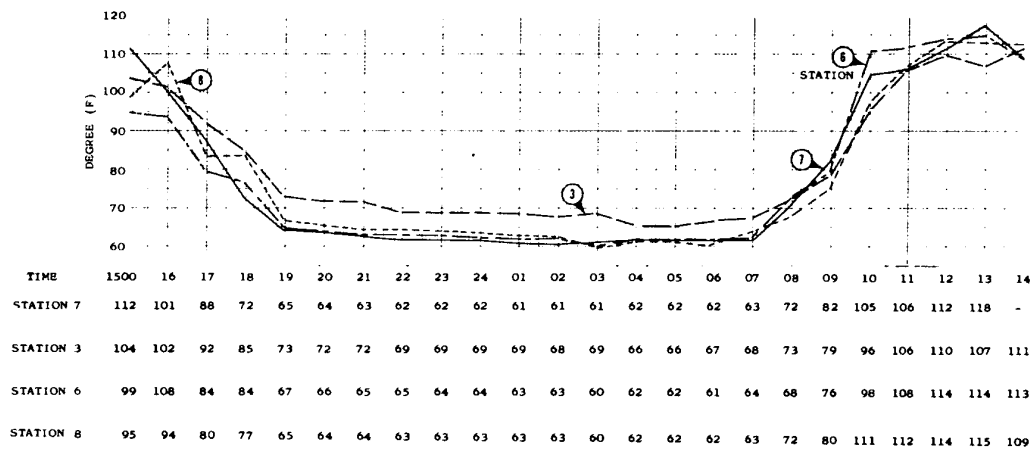
F

## 24 HOUR TEMPERATURE DATA

ALL TIMES PDT  
JUNE 25, 1964



## 24 HOUR TEMPERATURE DATA



## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 6/26/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1200	117	113	110	127	125	114	118	115						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		1315	73	64	61	WNW	6	6	10							

FLIGHT NO. 2 6/26/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2400	60	62	66			61	58	58						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		2400	61	59	89	CALM		9/10	5	STRATUS	700					

FLIGHT NO. 3 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1400	119	109	117	130	141	103	112	108						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		1430	74	64	58	NNW	5	0/10								

FLIGHT NO. 4 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2045	67	70			57	62	60	60						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		2100	64	61	85	WNW	2	1/10	10	STRATUS						

FLIGHT NO. 5 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0945	103	90	96			115	98	100	110					
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		1010	69	63	72	WNW	8	0/10	10							

FLIGHT NO. 6 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2300	66	68	68			56	62	58	62					
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		2324	62	59	84	NW	1	0/10	8							

FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1130	110	107	106			86	119	109	106	111				
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		1157	72	63	61	WNW	6	0/10	10							

FLIGHT NO. 8 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2200	70	66	69	61	56	63	60	64						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR.	VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE					
		2224	64	61	89	NNW	2									

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 9 6/10/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1300	104	107	104	94	120	105	91	108						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		1401	52	63	61	W	12	0/10	12							

FLIGHT NO. 10 6/10/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1415	62	67	64		61	59	58							
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		1415	63	68	65	W	12	0/10	12							

FLIGHT NO. 11 6/10/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1500	104	107	104	94	120	105	91	108						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		1500	52	63	61	W	12	0/10	12							

FLIGHT NO. 12 6/10/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1515	62	67	64		61	59	58							
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		1515	63	68	65	W	12	0/10	12							

FLIGHT NO. 13 7/2/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1400	114	110	115	107	120	110	124	119						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		1442	79	66	50	WNW	4	0/10	15							

FLIGHT NO. 14 7/2/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0300	64	62	63	59	55	64	58	60						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		0410	63	60	84	NNW	2	1/10	8							

FLIGHT NO. 15 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1430	113	110	112	94		106	118	105						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		1525	75	65	58	WNW	8	1/10	10							

FLIGHT NO. 16 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2130	62	60	72	60	60	64	60	60						
	WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE						
		2145	65	61	80	CALM	1/10	15								

## DAILY ACTIVITY LOG

SATURDAY, JUNE 27, 1964

Flight No. 3, 1400 PDT. At time of overflight no activity in yard. At 1450 a switch engine moved a line of cars into yard from north end.

Flight No. 4, 2100 PDT. No activity during traverse No. 6. Bright box cars have a film of condensed moisture. Tonight appears to be the clearest and crispest to date. There is no activity in yard at flyover; one flatcar loaded with crushed autos.

SUNDAY, JUNE 28, 1964

Flight No. 5, 1000 PDT. No activity in yard at time of flyover. Flatcar with crushed autos have been removed from area between flights 4 and 5. At 1020 four engines moving NW across Harbor Drive towards Pacific Transfer Company; 1208, one engine moving NW toward Echo Street.

Flight No. 6, 2300 PDT. Heavy dew on car tops; moderate activity in yard; engines running during traverse 5, 6, 7, 8; one auto in office parking lot during traverse No. 6; engine stack is 200°F, stack is approximately 1' x 2' opening and one foot high. Another engine is 178°F with a three foot high stack; both engine stacks are not covered; vent for engine in front (4' x 4') is 137°F; three car train moving SE during overflight; compressor at turntable (on during flight).

MONDAY, JUNE 29, 1964

Flight No. 7, 1130 PDT. Four refrigerator cars running, stacks are 6" x 6" with temperature of 250°F; temperature inside 45°F; repair crew using torch intermittently; six large engines, each with two exhausts (12" x 6") at 168°F and four or five fan exhausts (three foot diameter) are running; two smaller engines are running.

Flight No. 8, 2200 PDT. Slight moisture on roof of cars; small engine moving SE during traverse No. 6; there are two wagons (engines on) near resolution targets; no activity in yard during traverse No. 7; engine pulling two cars SE during traverse No. 8 (2345).

TUESDAY, JUNE 30, 1964

Flight No. 9, 1300 PDT. Two refrigerator cars running exhaust about 250°F, compressor vent on top is 80°F (4' x 4'); engine pulling 15 car train SE during traverse (F) - 1325; engine pushing four box cars NW during flyover of traverse No. 2 (1415).

Flight No. 10, 2430. Top of box cars very wet from condensation (0115); engine running (stationary) during traverse No. 6 (0130); compressor at roundtable going.

WEDNESDAY, JULY 1, 1964

Flight No. 11, 1215 PDT. Refrigerator freight car running; stack at 128°F, vent is 80°F.

Flight No. 12, 2145 PDT. Engine pushing train of eight cars SE; engine pulling train NW (2145); engine running SE; engine at scale weighing boxcar (2147); engine pulling train SE (2155); engine weighing car at scale (2155); two engines (stationary) running (2350); three autos moved into spare wheel area.

THURSDAY, JULY 2, 1964

Flight No. 13, 1400. Refrigerator car running, stationary; two engines running, stationary; new train moved into end track.

Flight No. 14. Refrigerator car on for five minutes (0310) stack 250°F; engine running 0325.

FRIDAY, JULY 3, 1964

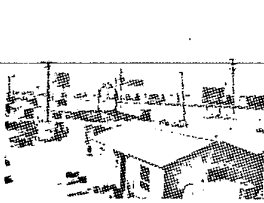
Flight No. 15. Munsell color reading on soil near Met-station and where car was parked 10 YR/5/2 (1430); Pass D - no movement in yard; two switch engines side by side at foot of Bearsly Street on five and six tracks from east side of yards; both engines running; box cars and hopper cars in front of station; on tracks 1, 2, 3, 4, 5, 6, and 7 spacing reflective box cars all corrugated metal; highly reflective box cars on track five connected to switch engine (Coors beer ad on car side); six diesel units in turntable area, five on one track operating, one on track nearest operating compressor shack not operating; Pass E, (1534) - no movement except cars from parking around bunk house; Coors beer cars are piggyback truck trailers with refrigeration units in operation; Munsell color of soil, near resolution targets 5 YR/6/3; Munsell color between track four and five, west of bunk house 10-YR/5/2; Munsell color of gravel 2.5 Y/8/1 and 2.5 Y/7/11; Munsell color of yellowed grass 2.5 Y/8/2.

Flight No. 16 - Pass 1 - line of cars had just moved out to south being pushed by a switcher; a switcher moves in from the north pushing a caboose and stopped adjacent to bunk house on track 1; Pass 2 - cars being moved into position on track 6 from north by rolling switcher entering yard with line of cars from north end. Diesels on turntable during flight; other box cars, etc. on tracks at variable intervals; men loading one truck in the yard during flights.

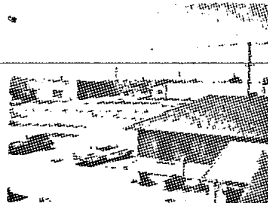


# ACTIVITY LOG

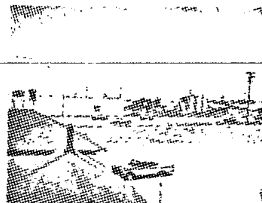
JULY 2, 1964



A



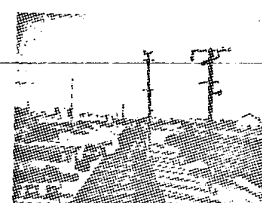
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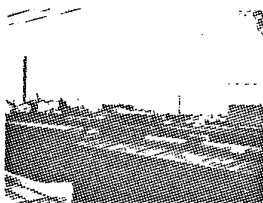
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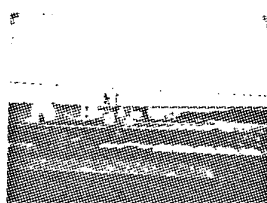
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E



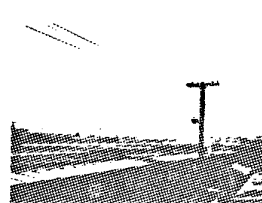
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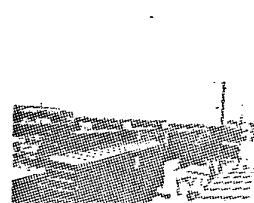
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H



I



J

## UNCALIBRATED RADIOMETRIC DATA\*

## SITE #2

Temperature Station	Thermodynamic Temperature (T <sub>T</sub> )	Radiometric Temperature (T <sub>R</sub> )	Relative Emissivity (E <sub>R</sub> )**			
1 Railway Track	43.5°C	21.0°C	0.745			
3 Bare Ground	47.0	40.0	0.904			
4 Top of Dull Railcar Roof	35.0	33.0	0.976			
5 Steel Railcar Roof	52.0	24.5	0.701	JUNE	SUNRISE	SUNSET
6 Cresole Wood Piler	48.0	45.0	0.964	24	5:42	8:00
7 Rusty Barrel	46.0	38.0	0.893	25	5:42	8:00
8 Composition Roof Top	45.0	46.0	1.012	26	5:42	8:00
-- Oil Patch on Grass	44.0	43.0	0.996	27	5:43	8:00
-- Switch Engine Stack Running	92.0	77.0	0.846	28	5:43	8:01
-- Vent Over Switch Engine	47.0	39.0	0.893	29	5:43	8:01
				30	5:44	8:01
				JULY		
				1	5:44	8:01
				2	5:45	8:00
				3	5:45	8:00
				4	5:45	8:00

\*\*  $E_R = \frac{T_R^4}{T_T^4}$  : where T<sub>R</sub> = Radiometric Temperature  
T<sub>T</sub> = Thermodynamic Temperature

\* Radiometric data were collected by a Stoll-Hardy Model HL 4 unfiltered radiometer with a 3-25 micron response. They are in error by an unknown amount due to reflected solar energy; therefore, the emissivity values have relative merit only.

# GROUND TRUTH SURVEY

SITE NO. III

MOTOR FREIGHT

PACIFIC TRANSFER CO

SAN DIEGO CALIFORNIA

STATINTL

STATINTL

SITE NUMBER III

Site Number III satisfied program requirements for a motor freight facility. The site is located at Sigbee Street and Harbor Drive, San Diego, California. The Pacific Transfer Company has a large warehouse with an asphalt parking lot and is served by rail. Contact for the company was [redacted]

STAT

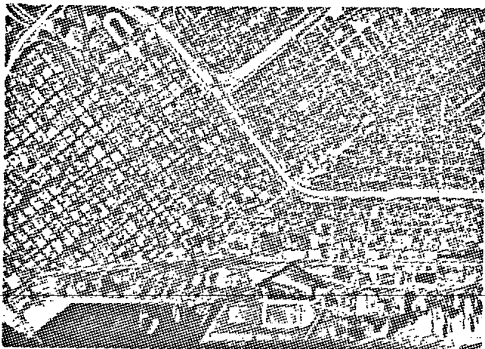
[redacted] ground data collection team consisted of [redacted]. Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorologic, photographic, activity, and Munsell color data. Their basic equipment consisted of a [redacted] Ground Truth Kit and communication equipment as described in the final project report.

Target sub-units monitored include automobiles, semi-tractors, aluminum semi-trailers, low-boys, and railroad box cars. Activity was restricted to daylight hours.

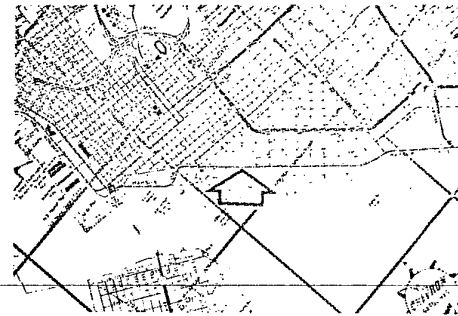
STATINTL

### TEMPERATURE STATIONS

<u>NO.</u>	<u>STATION</u>	<u>DESCRIPTION</u>
1	Ground	Asphalt Parking Lot - East of Pacific Transfer Co. Building
2	Air	Asphalt Parking Lot - East of Pacific Transfer Co. Building
3	Ground	Dirt Parking Lot Near Beer Warehouse
4	Air	Dirt Parking Lot Near Beer Warehouse
5	Ground	Pacific Transfer Co. Building
6	Wall	Pacific Transfer Co. Building
7	Air	Pacific Transfer Co. Building
8	Ground	Railway Tracks
9	Air	Railway Tracks
10	Track	Railway Tracks
11	Ground	Concrete Slab Near Beer Warehouse
12	Wall	Concrete Slab Near Beer Warehouse
13	Air	Concrete Slab Near Beer Warehouse
14	Ground	Dirt Between RR Tracks and Pac. Trans. Co.
15	Air	Dirt Between RR Tracks and Pac. Trans. Co.
16	Ground	Dirt Over Buried Diesel Tank
17	Air	Dirt Over Buried Diesel Tank
18	Ground	North Side of Pac. Trans. Co. Building
19	Wall	North Side of Pac. Trans. Co. Building
20	Air	North Side of Pac. Trans. Co. Building
21	Air	Near West Side of Pac. Trans. Co.
22	Track	Near West Side of Pac. Trans. Co.
23	Wall	West Side of Pac. Trans. Co.
24	Air	West Side of Pac. Trans. Co.

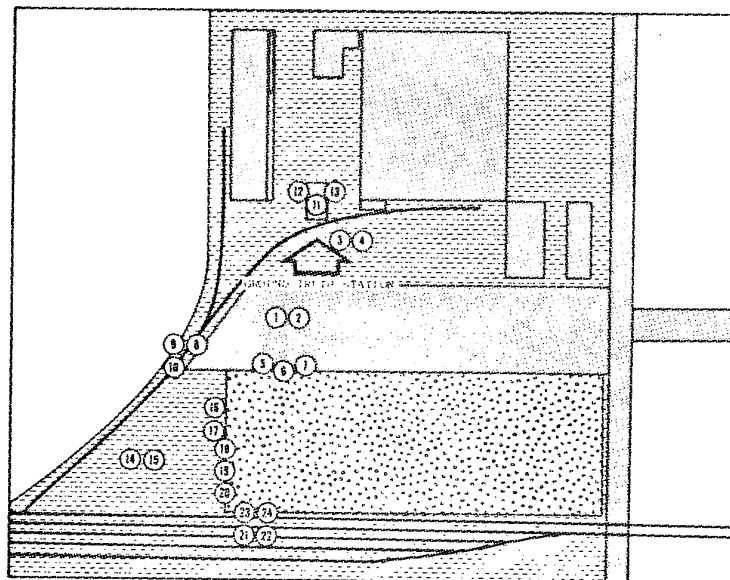


TEMPERATURE STATIONS  
LOCATION SHEET  
FIRST SURFACE MAP



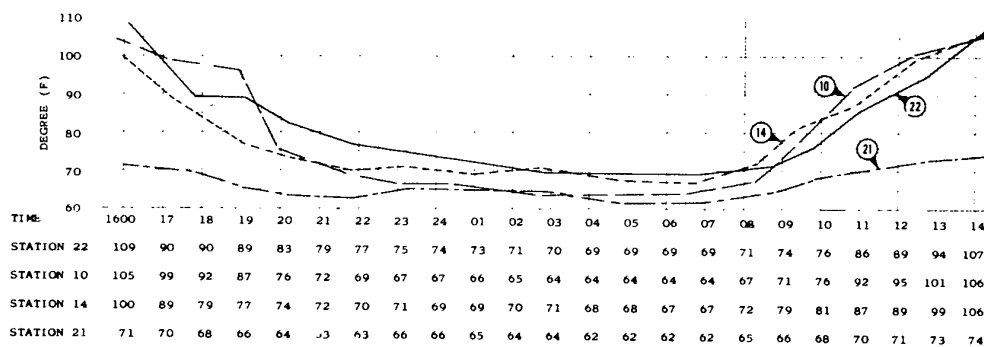
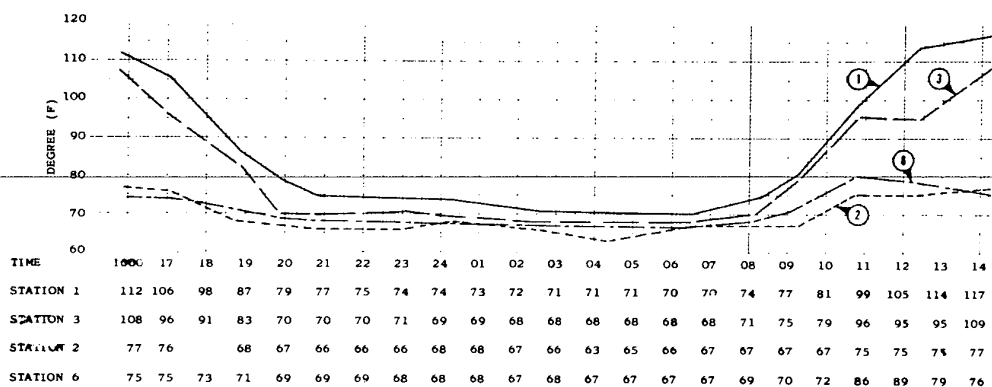
LEGEND

- BLACK TOP
- CONCRETE
- METAL
- SOIL
- WOOD
- GRAVEL

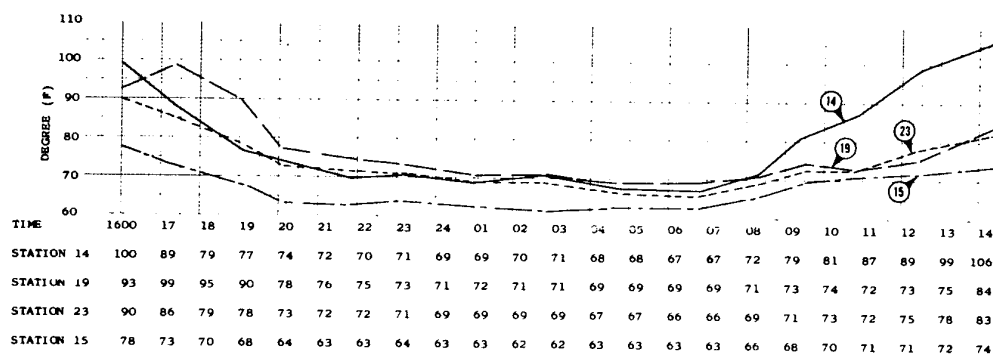


## 24 HOUR TEMPERATURE DATA

ALL TIMES PDT  
JUNE 25, 1964



## 24 HOUR TEMPERATURE DATA





FLIGHT 8  
Monday, June 29, 1964 (2200 Hrs)

Dew on top of TI station wagon

FLIGHT 9  
Tuesday, June 30, 1964 (1300 Hrs)

Temperature °F	Remarks
95	Orange RR car
89	Red (western) RR car
96	Red (500) RR car
93	2-ton straight van - hood
78	South side of aluminum van
77	2-ton straight Chevy van
93	Hood of 3/4-ton Chevy
80	Aluminum van trailer
81	Aluminum van trailer - south of Ford straight truck
83	Aluminum van trailer - cream colored
131	Wooden loading dock of building in the Northeast quadrant
121	Concrete dock
83	Side of building at concrete loading dock
89	Metal door at dock
105	concrete dock
84.5	Sheet metal siding type building
76	Shady side of building
120	Bed of flat hand truck located on south corner
96	Sunny side of RR car
82	Shady side of RR car

FLIGHT 10  
Wednesday, July 1, 1964 (0045 Hrs)

Temperature °F	Remarks
57	Wood red of truck
54	Metal strips of wood truck bed
130	TI radiator on station wagon
55	TI top on station wagon
60	Semi-trailer
66	Concrete dock on beer warehouse
62	Metal door on beer warehouse

FLIGHT 12  
Thursday, July 2, 1964 (2100 Hrs)

Temperature °F	Remarks
63	Box on trailer at north end of parking lot
62	3 boxcars on east siding
71	Wall next to loading dock of building in southeast quadrant
66	Steel door of building
73	Concrete loading dock
64.5	3 aluminum trailers
61.5	Wooden loading dock
72.5	Concrete loading dock
64	South wall of building (sheet metal)
63	West wall of building (sheet metal)
90	Hood of TI car - motor off
59	Wooden bed of semi-truck

FLIGHT 13  
Friday, July 3, 1964 (1500 Hrs)

Temperature °F	Remarks
104	Truck parked at intersection of siding and main line - metal bed
108	Truck parked at intersection of siding and main line - wooden bed
112	Top of red cab
	Building in northeast quadrant
114	Wooden dock in the sun
112	Concrete dock in the sun
89	Wooden dock in shade
99	Concrete dock in shade
80	South side of building (sheet metal)
90	West side of building (sheet metal)
86	North side of building (sheet metal)
98	Wooden loading dock on north side
106	Sheet of 3/8" black metal on loading dock
90	West side of the building at the loading dock
90	Sheet metal door at dock
104	Floor of the dock
104	Asphalt pavement at foot of dock
94	North side of building
83	Northeast side of RR car
96	Northwest side of RR car
112	Top of RR car
102	Top of aluminum trailer
102.5	Northwest side of aluminum trailer
81	Southeast side of aluminum trailer (shade)
89	Hood of trailer tractor

## DAILY TEMPERATURE DATA

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 6/26/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1225	114	75	95	77	79	79	79		72	101					99	72	100	76		75	71	73	94	78
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE											
		1250	DRY		WET		HUM.		DIR. VEL.		%		VIS.		TYPE											
			70.5		62.5		64		NNE 2		0/10		15													
FLIGHT NO. 2 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1018	69	63	66	62	65	63	65		60	60					65	60	66	60		69	61	61	70	67
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE											
		2400	63		59.5		84		CALM		9/10		5 F													
FLIGHT NO. 3 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1415	122	80	111	82	81	77	79		78	112	105	105	74	108	74			94	82	78	75	111	84	73
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE											
		1400	71		63		64		NW 3		0/10		15													
FLIGHT NO. 4 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		2055	74	64	76	74	66	66	65		65	68					68	65	66	64		72	65	65	77	71
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE											
		2036	65.6		60.5		75		N 2		0/10		10													
FLIGHT NO. 5 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		0948	93	78	94	78		88	78		75	87	93		78	87	71	68	70		69	69	73	82	70	69
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE											
		0935	66.5		61		73		NNW 4		0/10		15													

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 6 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
		2300	65	62			65	66	63		63	63	72		62			66	64	70		62	63	71	60	62	
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE												
		2342	65	60	75		NE	1		0/10		5	H														

FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1154	112	79	113		121	87	87		77	102	107		80	97	78	93	74		71	71	77	97	73	77
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		1114	68.5	61.0	61		NW	8		0/10		15														

FLIGHT NO. 8 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	
		2205	71	64	68	64	68	69	66	72	62		72		74	68	65	68	65		73	64	65	72	69	65	
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE												
		2152	64	60.5			NE	2		0/10		5	H														

FLIGHT NO. 9 6/30/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1414	114	78	108	79	78	75	82	101	82	108				93	78	115	78	83		78	78	110		79
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		1240	76	64	66		NW	6		0/10		15														

FLIGHT NO. 10 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		0030	68	63	68	62	64	65	65		62	60	70		62	67	63	62	61		70	61	63	67	68	64
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		0015	63	60	84		N	4		4/10																

## METEOROLOGY DURING OVERFLIGHTS

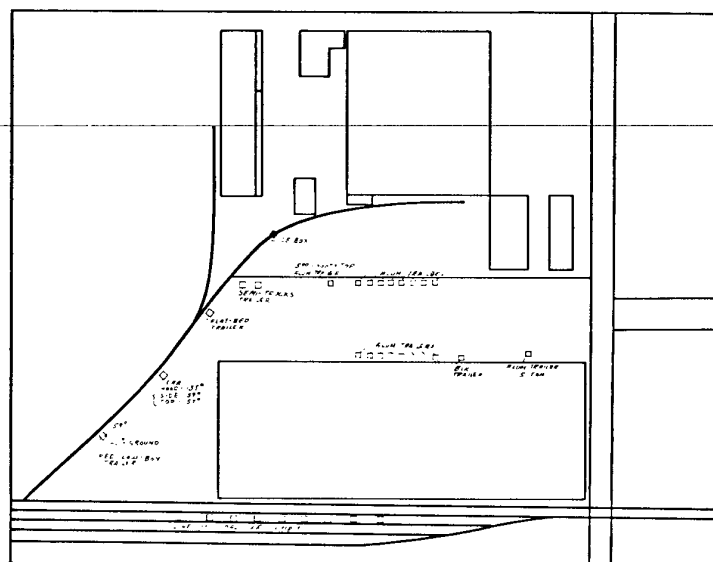
FLIGHT NO. 11 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1230	112	75	92	76	94	80	83		76	98					97	74	95	76	92	74	71	72	92	74
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		1200	72		63	61	N	8		0/10	15															

FLIGHT NO. 12 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		2106	74	67	72	65	69	69	70		64	68	78		65	70	64	68	64	74		64	64	75	71	64
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		2100	65		60	75	N	4		0/10	10															

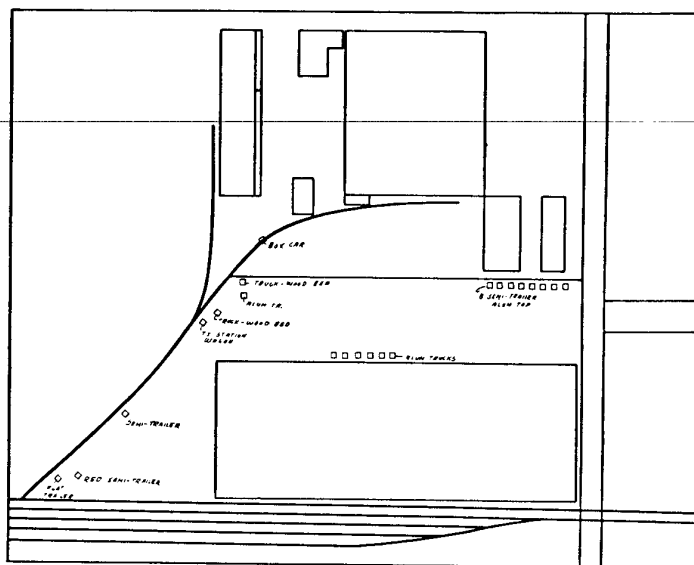
FLIGHT NO. 13 7/2/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		1400	118	84	114	86	89	82	82	124	86	112	108		86			112	83	117	86	83	118	107	91	88
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		1350	79		65	50	NNW	10		0/10	15															

FLIGHT NO. 14 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
		0327	67	63	66	62	66	64	62		66	60	68		62	67	63	65	64		68	64	63		68	63
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE											
		0230	64		61.5	82																				

## DAILY ACTIVITY LOG

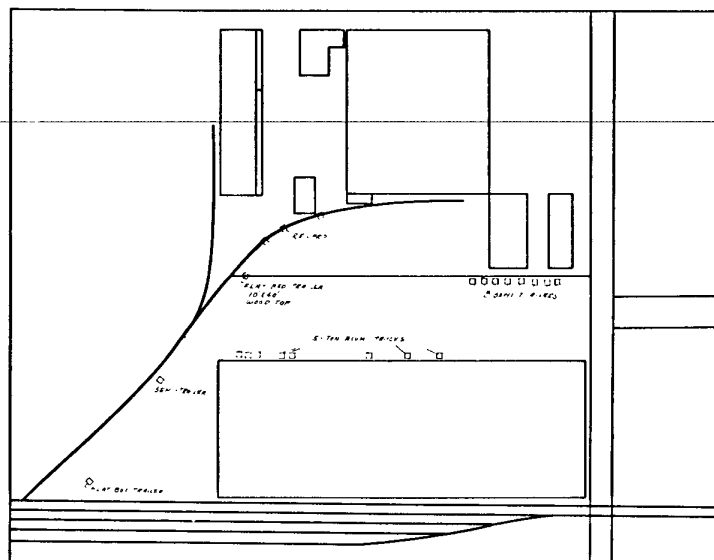


FLIGHT #2                  JUNE 26, 1964                  2400 PDT

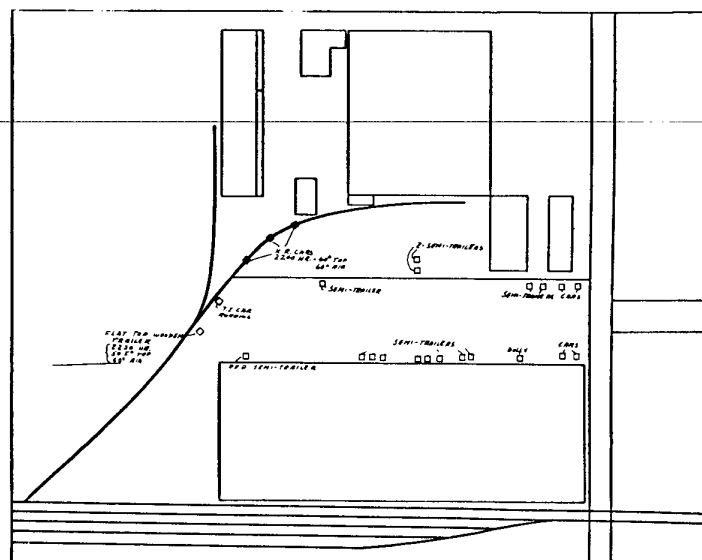


FLIGHT #4      JUNE 27, 1964      2100 PDI

## DAILY ACTIVITY LOG

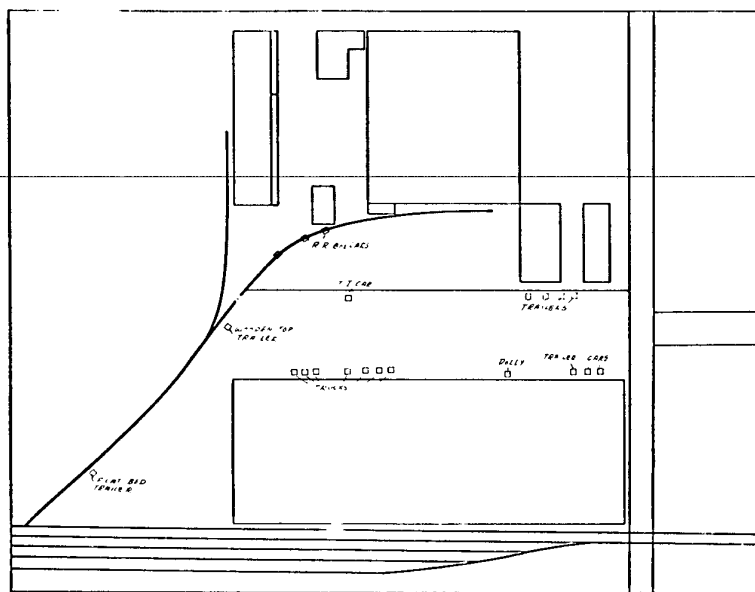


FLIGHT #6                  JUNE 28, 1964                  2200 PDT



FLIGHT #8                  JUNE 29, 1964                  2200 PDT

## DAILY ACTIVITY LOG



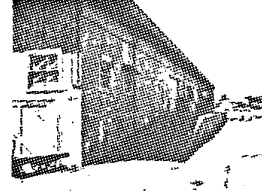
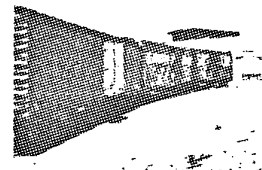
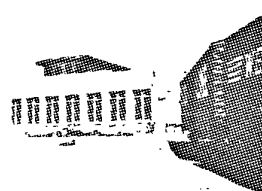
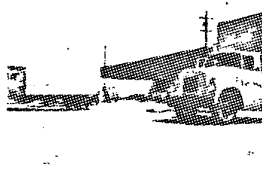
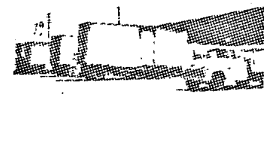
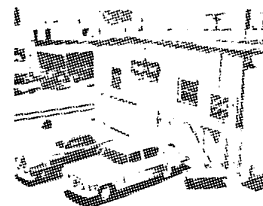
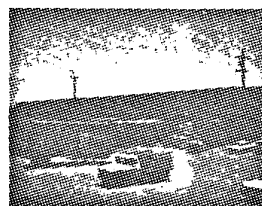
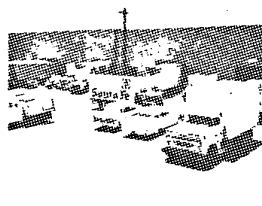
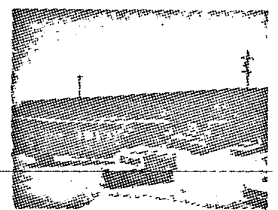
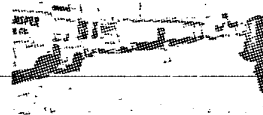
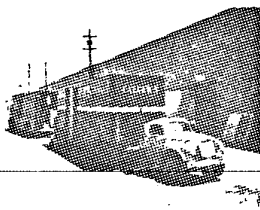
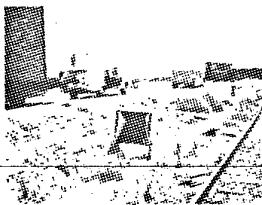
FLIGHT #10 JUNE 31, 1964 0001 PDT

S. TL 111

A Flight 3: Time 1355: June 27, 1964  
B Flight 3: Time 1357: June 27, 1964  
C Flight 3: Time 1400: June 27, 1964  
D Flight 3: Time 1400: June 27, 1964  
E Flight 9: Time 1400: June 30, 1964  
F Flight 9: Time 1400: June 30, 1964  
G Flight 9: Time 1400: June 30, 1964  
H Flight 9: Time 1400: June 30, 1964  
I Flight 9: Time 1400: June 30, 1964  
J Flight 9: Time 1400: June 30, 1964  
K Flight 9: Time 1400: June 30, 1964  
L Flight 9: Time 1400: June 30, 1964  
M Flight 9: Time 1400: June 30, 1964  
N Flight 9: Time 1400: June 30, 1964  
O Flight 9: Time 1400: June 30, 1964



## DAILY ACTIVITY LOG



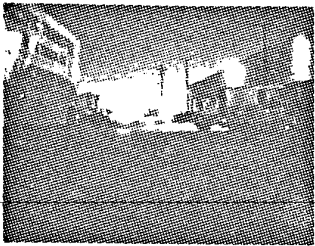
A Flight 9: Time 1400; June 30, 1964  
B Flight 9: Time 1400; June 30, 1964  
C Flight 9: Time 1400; June 30, 1964  
D Flight 9: Time 1400; June 30, 1964  
E Flight 9: Time 1400; June 30, 1964  
F Flight 10: Time 0120; July 1, 1964  
G Flight 10: Time 0100; July 1, 1964  
H Flight 10: Time 0100; July 1, 1964  
I Flight 11: Time 1230; July 1, 1964  
J Flight 11: Time 1230; July 1, 1964  
K Flight 11: Time 1230; July 1, 1964  
L Flight 11: Time 1230; July 1, 1964  
M Flight 11: Time 1230; July 1, 1964  
N Flight 11: Time 1230; July 1, 1964  
O Flight 12: Time 1000; July 1, 1964

SITE III

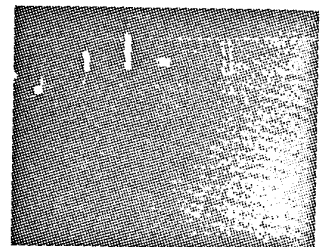
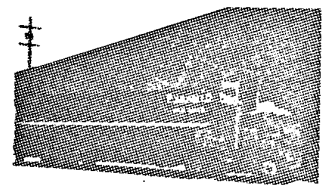
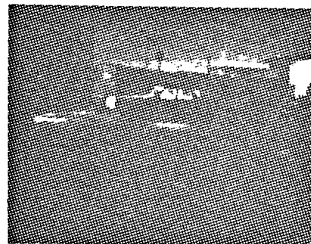
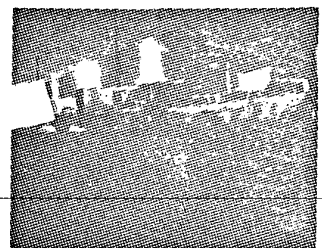
A Flight 12: Time 2230: July 1, 1964  
B Flight 12: Time 2150: July 1, 1964  
C Flight 12: Time 2155: July 1, 1964  
D Flight 12: July 1, 1964  
E Flight 12: July 1, 1964  
F  
G Flight 10: Time 0100: July 1, 1964  
H  
I

02-1

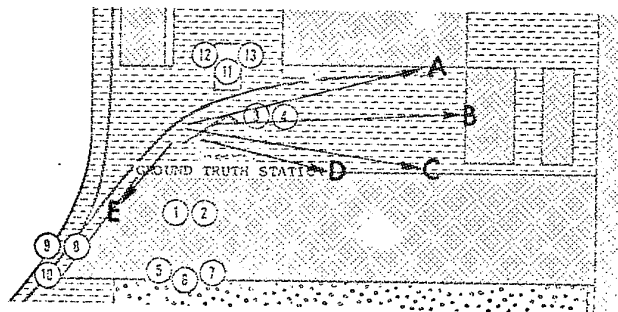
## DAILY ACTIVITY LOG



A



## PANORAMIC



## UNCALIBRATED RADIOMETRIC DATA\*

SITE #3

Temperature Location	Thermodynamic Temperature ( $T_T$ )	Radiometric Temperature ( $T_R$ )	Relative Emissivity ( $E_R$ )**	SUNRISE & SUNSET (PDT)		
1 Asphalt Apron	47.0	43.0	0.953	JUNE	SUNRISE	SUNSET
3 Dirt Parking Lot	47.5	42.0	0.953			
11 Concrete Slab	47.0	42.0	0.917			
14 Bare Dirt	46.0	43.0	0.964			
-- Concrete Block-				24	5:42	8:00
Beige-Shade	25.5	23.3	0.972	25	5:42	8:00
-- Concrete Block-				26	5:42	8:00
Beige-Sun	26.0	24.0	0.972	27	5:43	8:00
				23	5:43	8:01
				29	5:43	8:01
				30	5:44	8:01
				JULY		
** $E_R = \frac{T_R^4}{T_T^4}$ ; where $T_R$ = Radiometric Temperature				1	5:44	8:01
				2	5:45	8:00
* Radiometric data were collected by a Stoll-Hardy Model HL 4 unfiltered radiometer				3	5:45	8:00
with a 3-25 micron response. They are in error by an unknown amount due to reflected				4	5:45	8:00
solar energy; therefore, the emissivity values have relative merit only.						

# GROUND TRUTH SURVEY

SITE NO. IV

HARBOR AREA

TENTH AVE TERMINAL

SAN DIEGO CALIFORNIA

STATINTL

STATINTL

STATINTL

SITE NUMBER IV

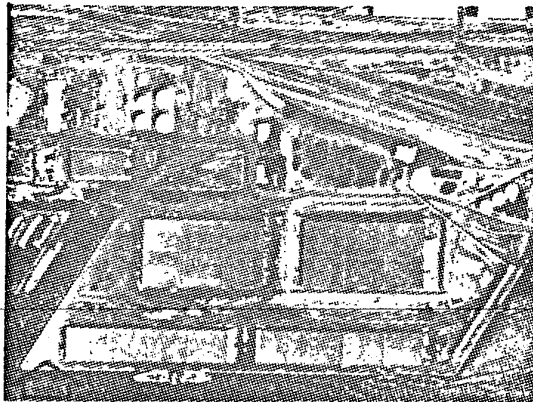
Site Number IV satisfied program requirements for a harbor area. The site is identified as the Tenth Avenue Marine Terminal, San Diego, California. This facility has transit sheds and warehouses to provide more than one million square feet of covered storage and berths for seven large cargo vessels. Contact for the terminal was [redacted]

STAT

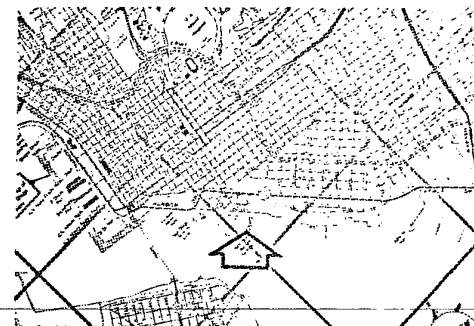
[redacted] ground data collection team consisted of [redacted]. Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorologic, photographic, activity, and Munsell color data. Their basic equipment consisted of a [redacted] ground truth kit and communication equipment as described in the final project report.

Target sub-units monitored include liquid storage tanks, automatic conveyor system, railroad cars, vehicles, and open stored materials. Activity, for the most part, was dependent on ship docking schedules and was concentrated between 0600 2400 hours.



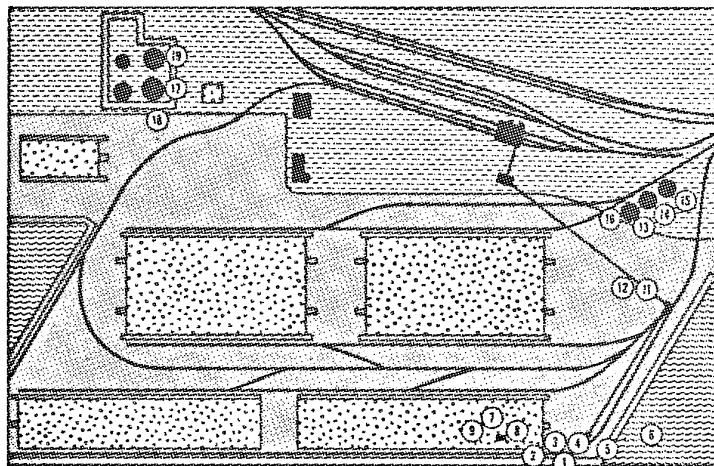


# TEMPERATURE STATIONS LOCATION SHEET FIRST SURFACE MAP



## HARBOR - SITE IV

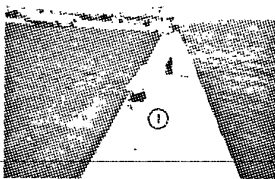
STATION NO.	DESCRIPTION
1	Concrete Ledge Around Perimeter of Dock
2	Asphalt Apron
3	Steel Nail on Apron
4	Metal Cover - Painted Aluminum
5	Yellow Dog
6	Ocean Water
7	Rocks - Major Portion of Roof Composition
8	White Hatch
9	Concrete Wall
10	Air - Measured 5 ft Above Ground
11	Conveyor Belt Cover
12	Asphalt Under Conveyor Belt
13	Molasses Tank - Left
14	Molasses Tank - Center
15	Molasses Tank - Right
16	Concrete Around Tanks
17	Fuel Storage #1
18	Asphalt Around Fuel Tank
19	Fuel Storage #2



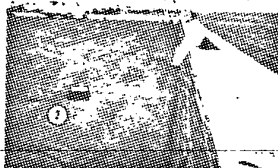
## LEGEND

	BLACK TOP
	CONCRETE
	WATER
	METAL
	GRAVEL
	SOIL

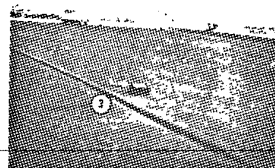
## TEMPERATURE STATION IDENTIFICATION



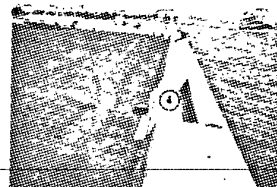
A



B



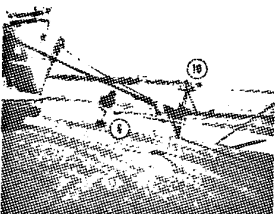
C



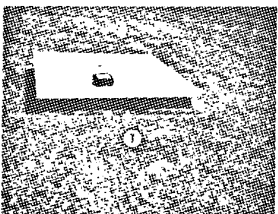
D



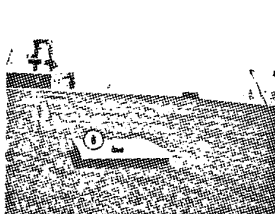
E



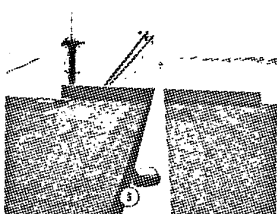
F



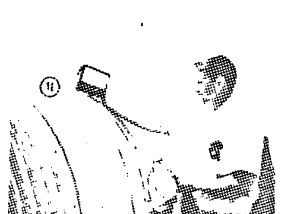
G



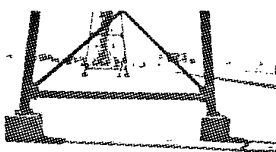
H



I



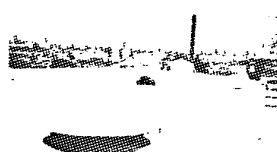
J



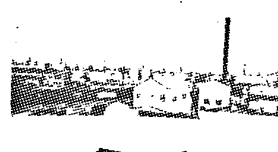
K



L



M



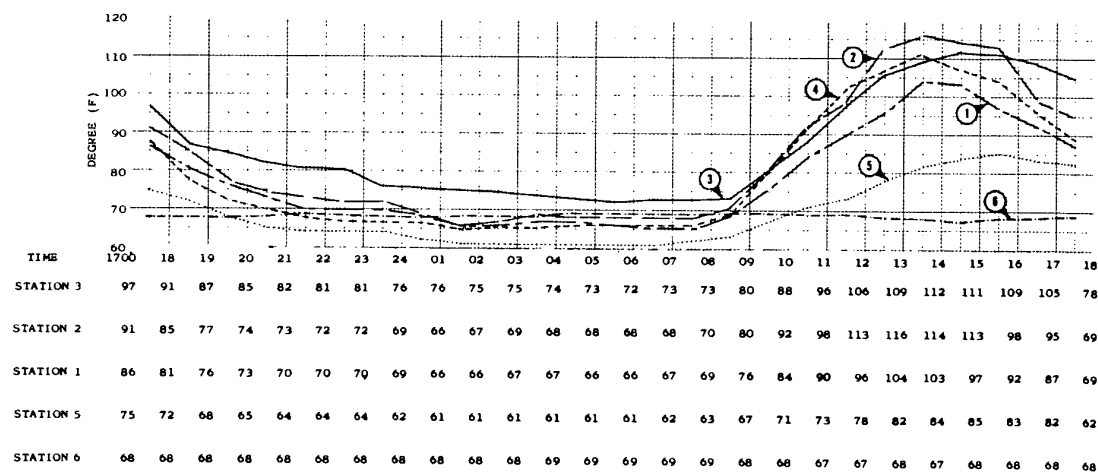
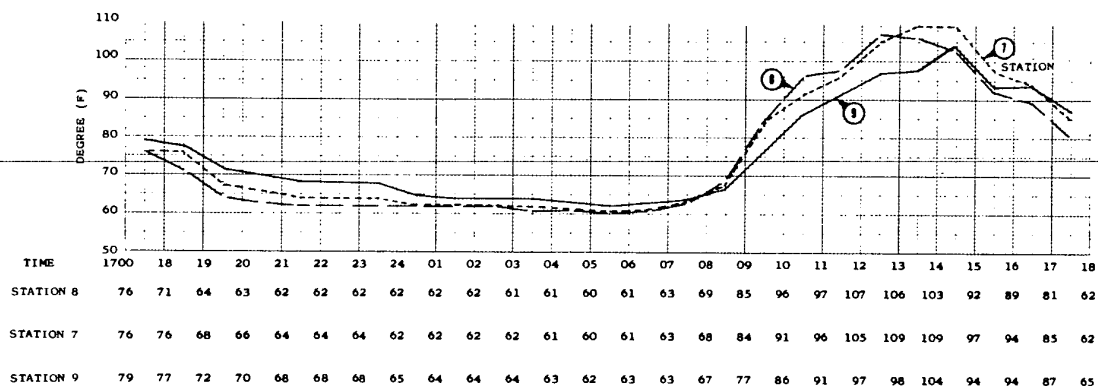
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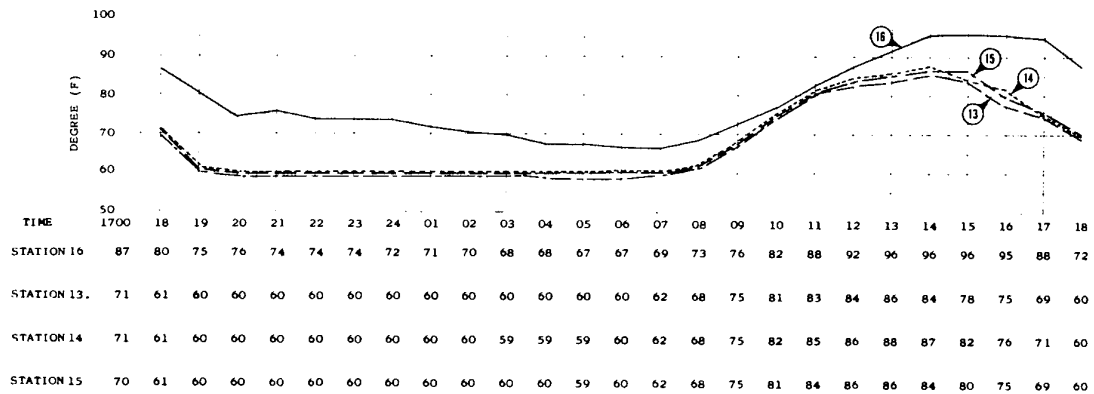
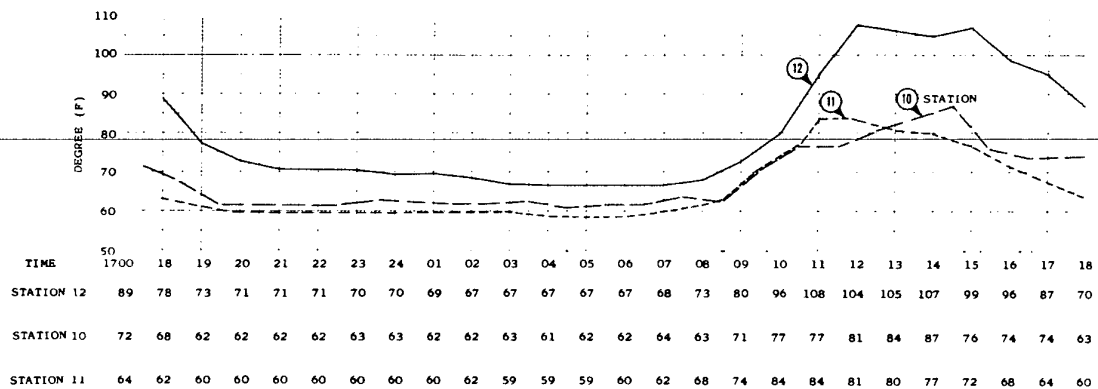
O

## 24 HOUR TEMPERATURE DATA

ALL TIMES P D T  
JUNE 25, 1964



## 24 HOUR TEMPERATURE DATA



## METEOROLOGY DURING OVERFLIGHTS

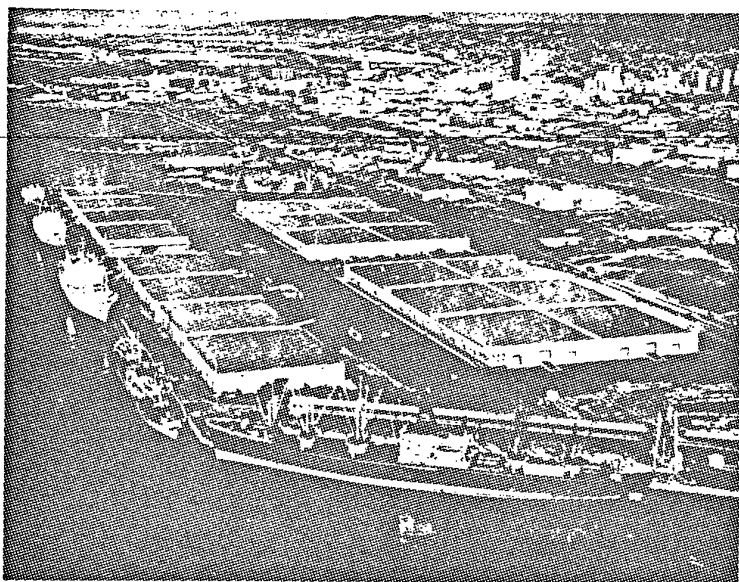
[illegible]

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 6 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1200	66	68	77	64	61	66	56	56	61	61	60	66	56	56	56	70	56	65	
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		2322	DRY		WET		HUM.		DIR. VEL.		%		VIS.		TYPE						
			62		60	89		WNW	4		6/10		7H								
FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1100	89	105	97	104	72	69	103	98	94	70	86	96	82	82	82	78	78	96	
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		1156	DRY		WET		HUM.		DIR. VEL.		%		VIS.		TYPE						
			66.5		62	75		W	12		0/10		7 H								
FLIGHT NO. 8 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1200	66	67	77	64	61	67	58	58	62	59	58	66	55	55	68	54	66		
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		2239	DRY		WET		HUM.		DIR. VEL.		%		VIS.		TYPE						
			63		60.5	87		SW	3		0/10		10								
FLIGHT NO. 9 6/30/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1300	101	110	112	109	80	68	105	103	96	74	82	84	84	86	84	90	84	104	
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		1312	DRY		WET		HUM.		DIR. VEL.		%		VIS.		TYPE						
			68.5		62.5	70		WNW	16		0/10		10								
FLIGHT NO. 10 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2400	64	68	76	64	62	68	57	57	60	60	57	65	52	52	52	71	52	66	
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		0015	DRY		WET		HUM.		DIR. VEL.		%		VIS.		TYPE						
			63.5		60.5	84		CALM					7 H								

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 11 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1200	94	107	104	108	76	70	105	105	95	67	83	83	89	92	88	93	85	97	87
	WEATHER	TEMP.																			
		TIME	DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE											
		1211	66.5	61.5	74	WNW	12	0/10	7 H												
FLIGHT NO. 12 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2100	69	71	81	69	65	71	61	60	66	65	60	71	57	58	57	69	56	71	63
	WEATHER	TEMP.																			
		TIME	DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE											
		2155	63.5	60	82	CALM		0/10	5												
FLIGHT NO. 13 7/2/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1400	99	109	111	108	80	68	104	96	96	71	82	107	85	81	84	98	86	110	92
	WEATHER	TEMP.																			
		TIME	DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE											
		1441	71.5	66.5	75	WNW	13	0/10	10												
FLIGHT NO. 14 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		0300	70	67	72	66	62	68	58	59	60	62			57	56	56	64	58	64	62
	WEATHER	TEMP.																			
		TIME	DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE											
		0310	63	61	84	CALM		1/10	10 F												
FLIGHT NO. 15 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1400																	88	108	92
	WEATHER	TEMP.																			
		TIME	DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE											
		1410	70	63	68	NNW	8	1/10	10												



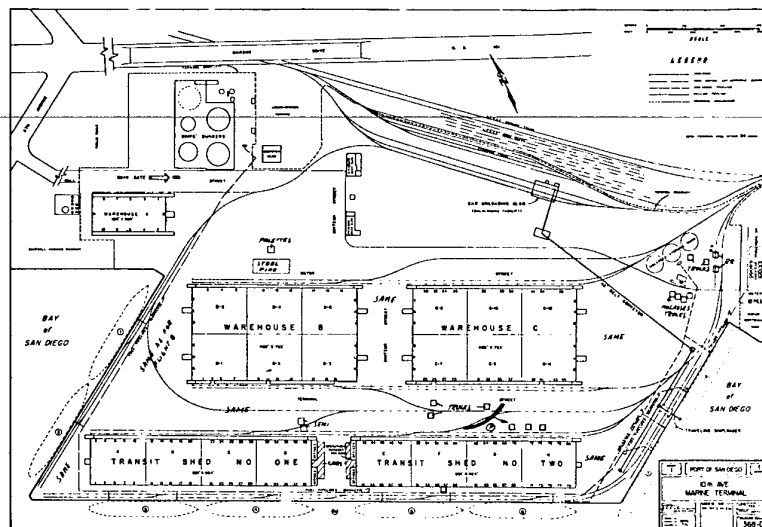
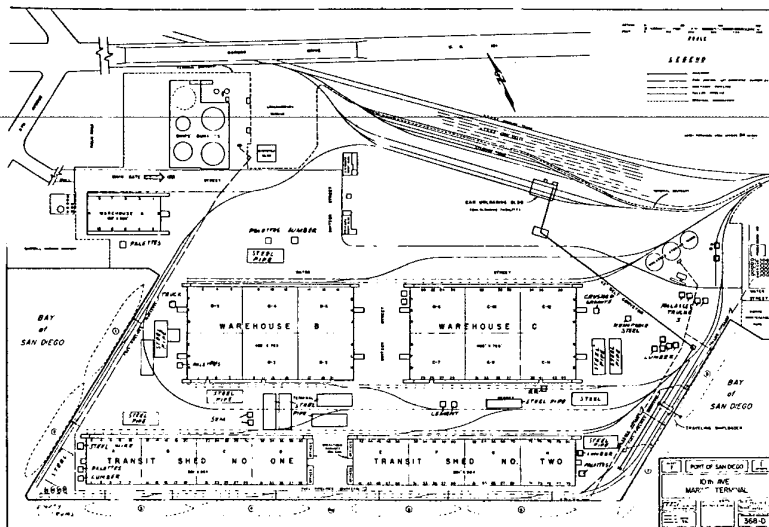
TENTH AVENUE MARINE TERMINAL. — Rated as one of the most modern marine terminals in United States, this Port of San Diego facility has massive sheds and warehouses to provide more than one million square feet of covered storage space. Berths for seven big cargo vessels are provided, including one for loading of bulk commodities. As high cranes or gantry is Warehouse "A", recently completed, and last of major structures to be erected on the terminal.

## ACTIVITY LOG

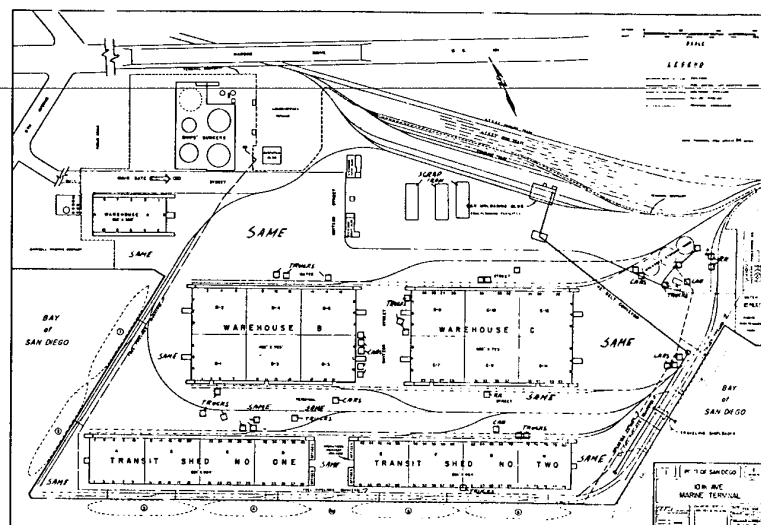
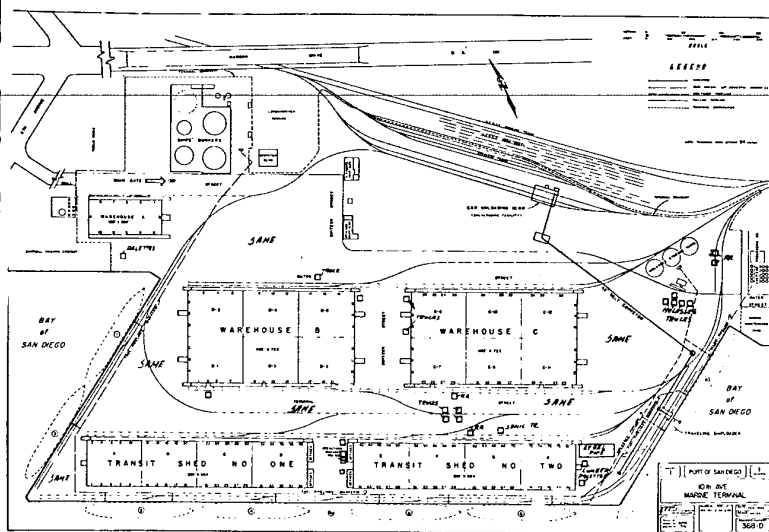
SITE IV.						
JUNE	ARRIVED	SAILED	SHIP	FLAG	BERTH	
24	1135	25-1739	Metobija	Yugo.	10-1	Dis. General
25	0123	27-1418	Hakomesan Marv	Jap	10-4	LD. Potash & Pellets Dis. General
26	1222	28-0310	Oriana	Panama	10-6	Dis. Fishmeal
JULY						
2	0835	2-2030	Barge Rogue	U. S.	10-8	Dis. Lumber
2	2000		Del Norte Woodman	U. S.	10-1	Dis. Lumber
3	0525		Iberville	U. S.	10-6	Dis. Plywood



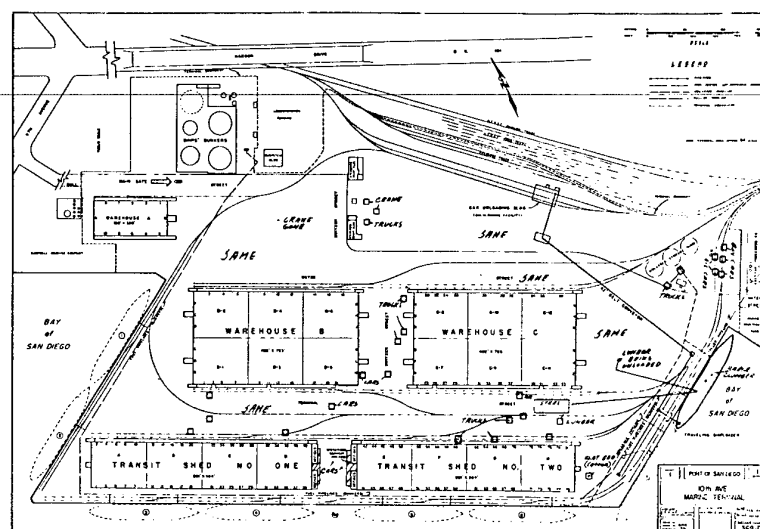
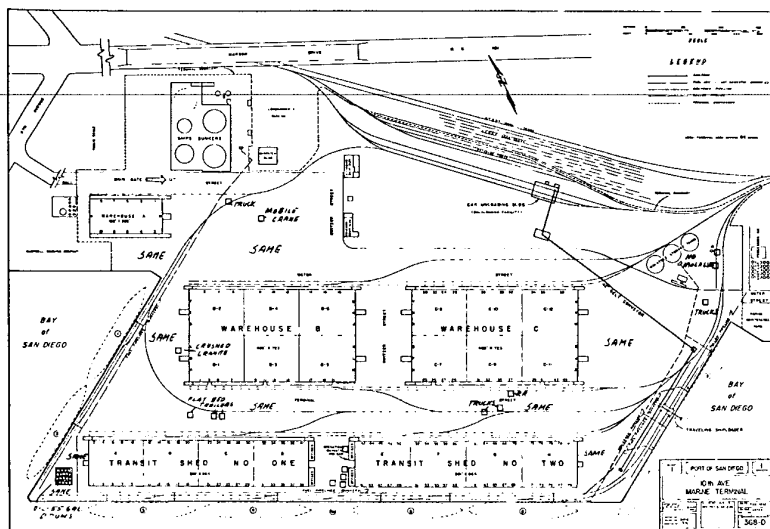
## DAILY ACTIVITY LOG



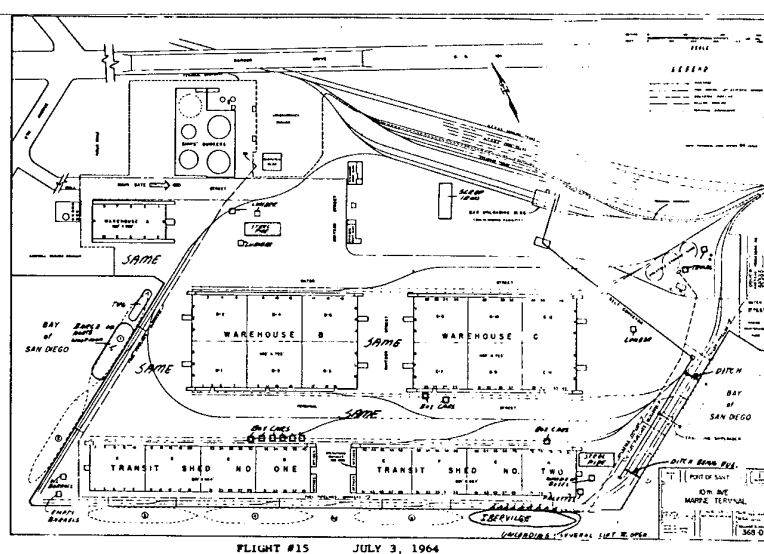
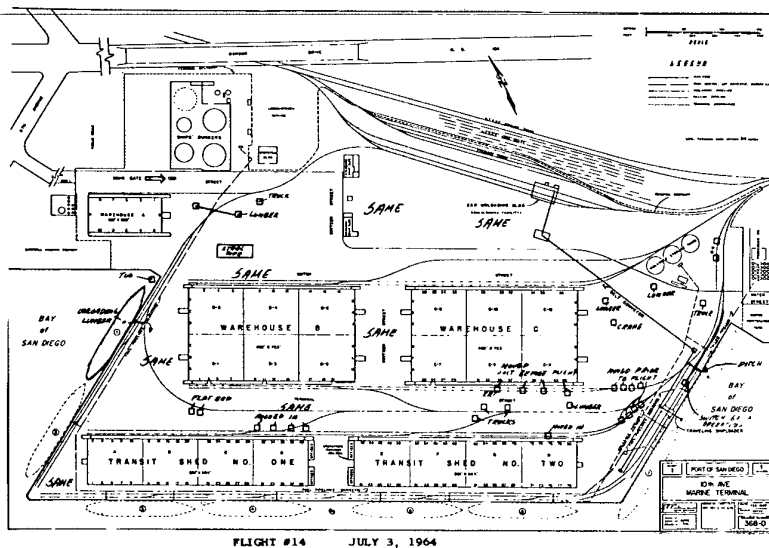
## DAILY ACTIVITY LOG



## DAILY ACTIVITY LOG



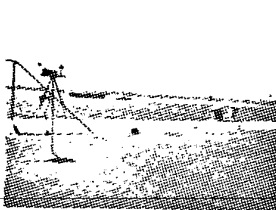
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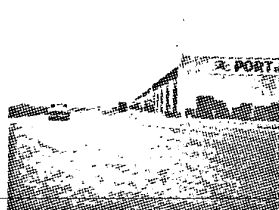
SITE IV

- A. Flight No. 11  
10th Avenue terminal looking W from site  
Traverse H
- B. Flight No. 11  
10th Avenue terminal looking WNW from site  
Traverse G
- C. Flight No. 11  
July 1, 1964  
Atop molasses tank
- D. Flight No. 11  
July 1, 1964
- E. Flight No. 11  
July 1, 1964
- F. Concrete Wall Near  
Ocean
- G. Flight No. 13  
10th Avenue terminal looking ENE
- H. Micro Neological Set-up Near  
Concrete Wall
- I. Flight No. 13  
10th Avenue terminal
- J. Flight No. 13  
10th Avenue terminal
- K. Flight No. 13  
10th Avenue terminal looking N
- L. Flight No. 13  
10th Avenue terminal looking WNW

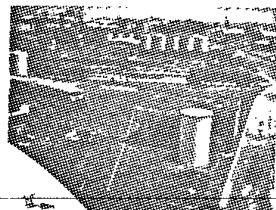
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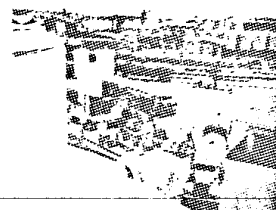
A



B



C



D



E



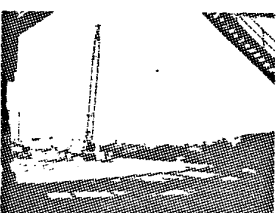
F



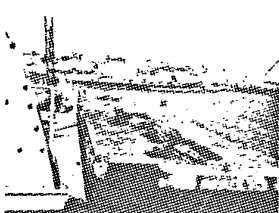
G



H



I



J



K



L

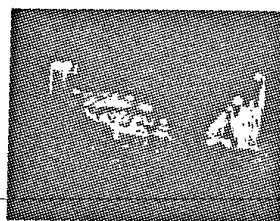
SITE IV

- A. Flight No. 3  
10th Avenue terminal warehouse C being used to  
store bags of products from ship (Oriana)
- B. Flight No. 4  
June 27, 1964 - 2230  
The Oriana (berth 6) unloading fish meal
- C. Flight No. 4  
10th Avenue warehouse being used to store fish  
meal from the Oriana
- D. Flight No. 5
- E. June 28, 1964  
10th Avenue terminal N end of docks looking W  
4 ships left center  
2 cruisers  
1 tender
- F. Flight No. 5  
10th Avenue terminal site looking NW  
Traverse D
- G. Flight No. 5  
10th Avenue terminal site looking WNW
- H. Flight No. 7 - 1214  
Looking SW from station LSD passing between  
passes F and G
- I. Flight No. 7  
June 29, 1964  
Pass C looking S harbor excursion boat
- J. Flight No. 9  
10th Avenue terminal looking WNW  
Traverse D through I.
- K. Night Shot of  
Warehouse Facilities
- L. Night Shot of  
Warehouse Facilities

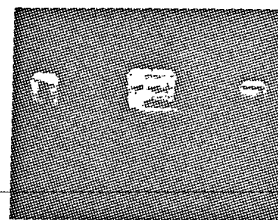
## DAILY ACTIVITY LOG



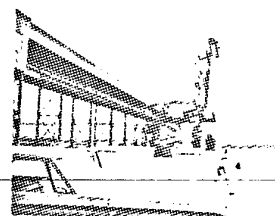
A



B



C



D



E



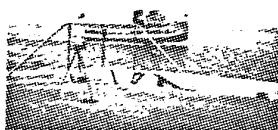
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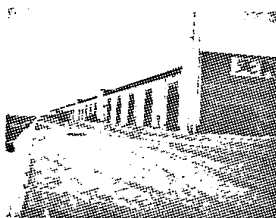
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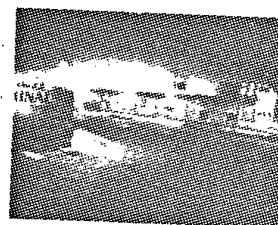
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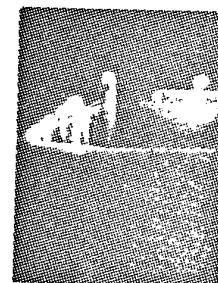
I



J



K



L



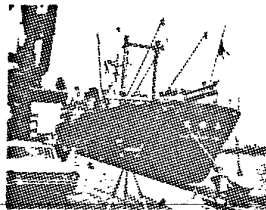
SITE IV

- A. Flight No. 1  
Looking NNW from 10th Avenue terminal site
- B. Flight No. 1  
10th Avenue terminal looking ENE
- C. Flight No. 1  
10th Avenue terminal looking ESE
- D. Flight No. 1  
10th Avenue terminal looking WNW
- E. Flight No. 2  
Looking WNW 10th Avenue terminal site
- F. Flight No. 2  
Looking ENE 10th Avenue terminal site
- G. Flight No. 3  
Traverse A B
- H. Flight No. 3  
Traverse C-D
- I. Flight No. 3  
All traverses
- J. Flight No. 3  
Traverse C
- K. Flight No. 3  
10th Avenue terminal looking WNW
- L. Flight No. 3  
10th Avenue terminal site looking E  
Traverse H. Note position of traverse  
site: 10th

## DAILY ACTIVITY LOG



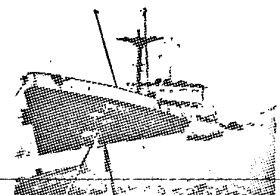
A



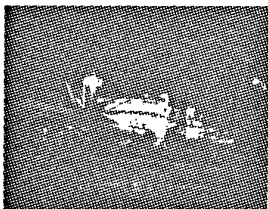
B



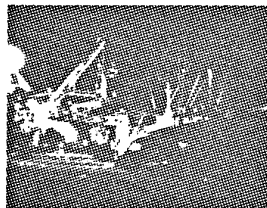
C



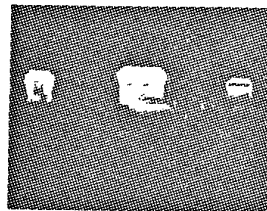
D



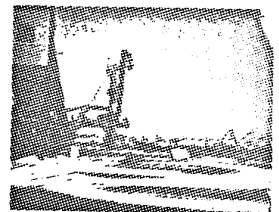
E



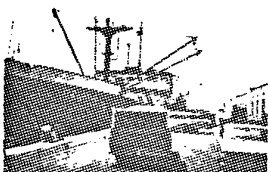
F



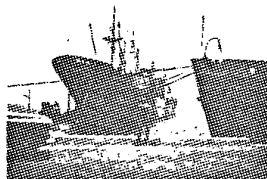
G



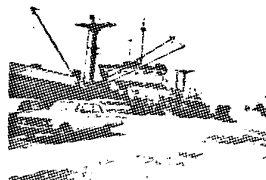
H



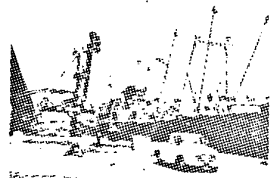
I



J

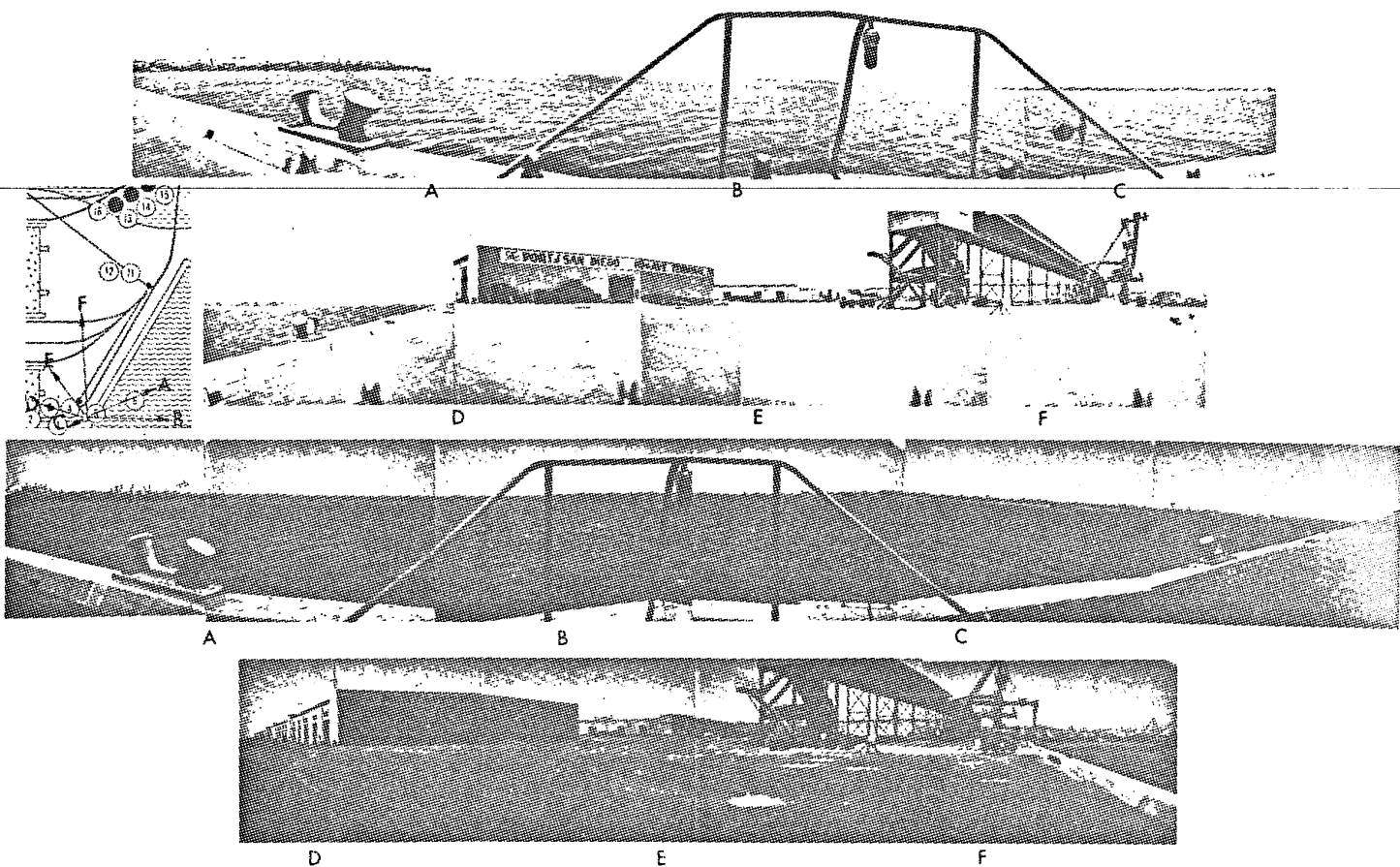


K

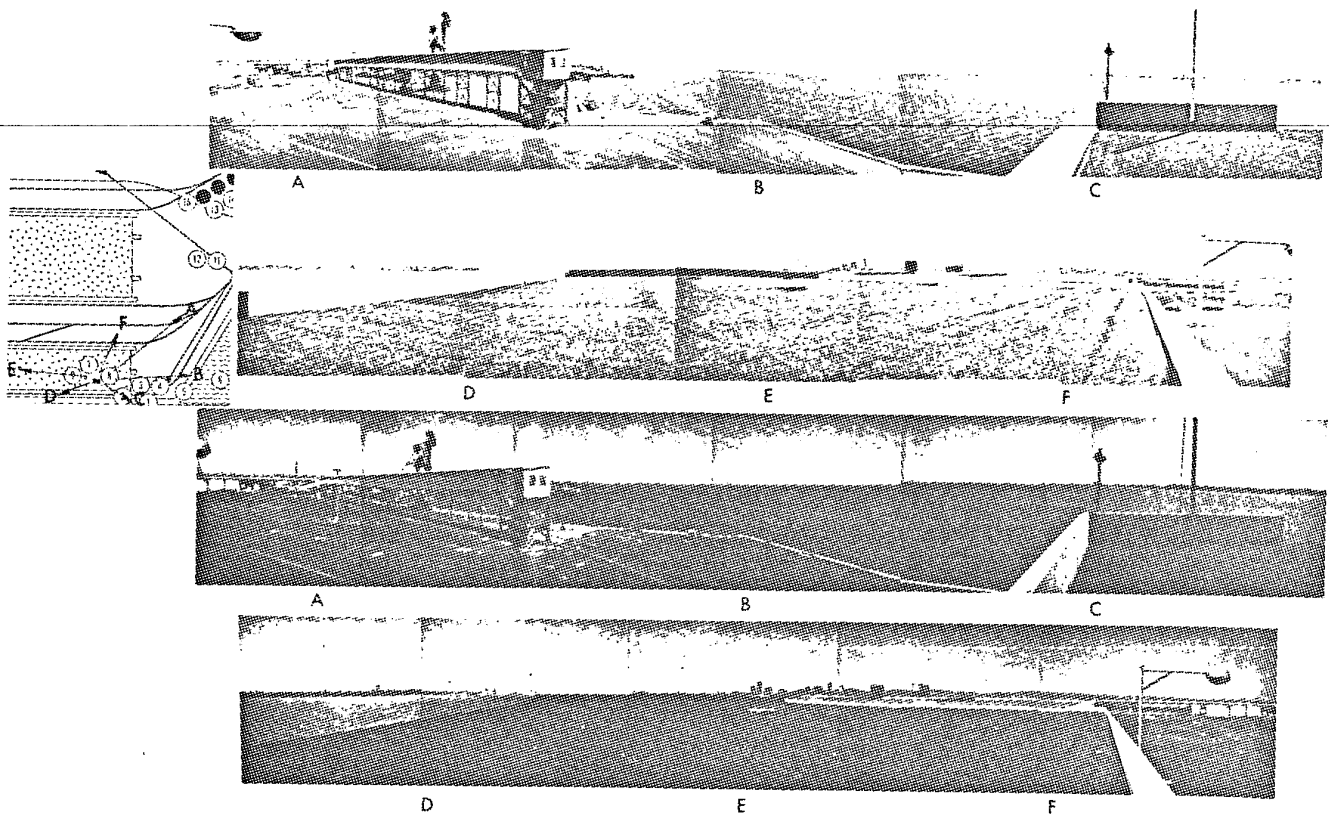


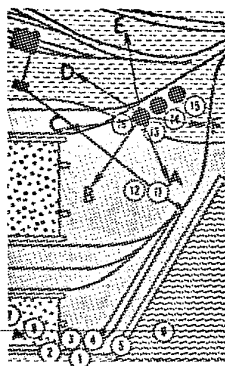
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# 360° PANORAMIC

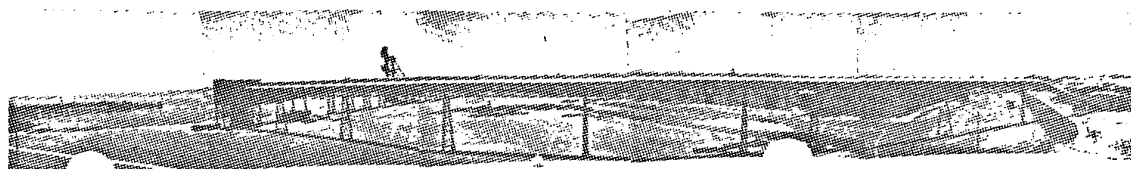


# 360° PANORAMIC





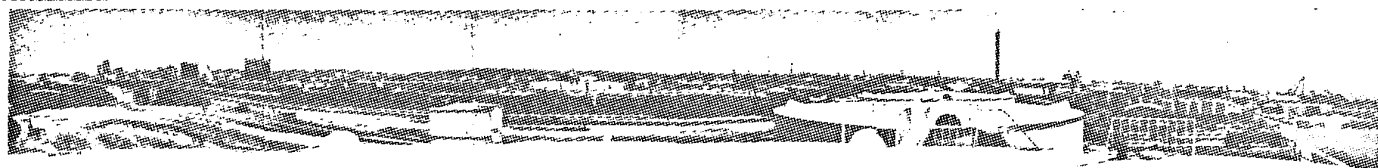
# 360° PANORAMIC



A

B

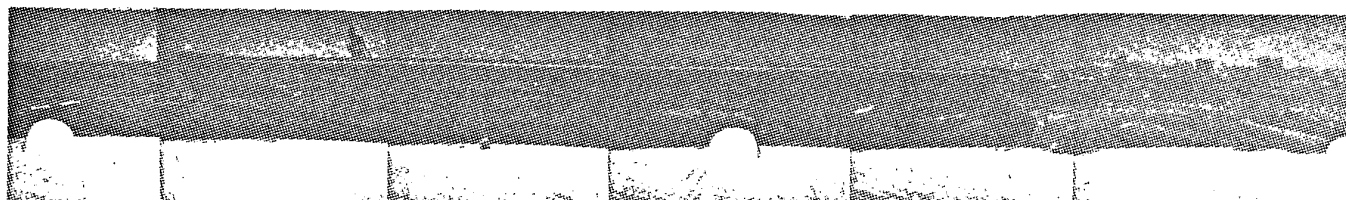
C



D

E

F

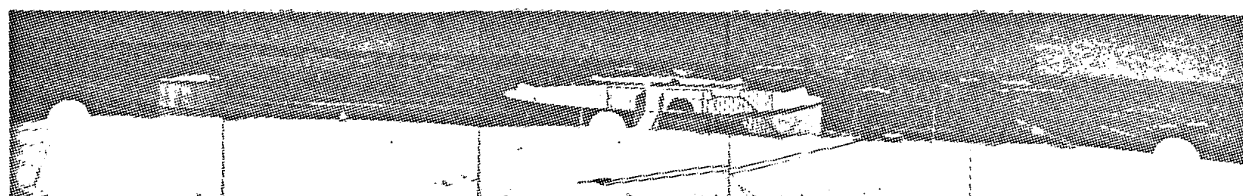


A

B

C

D



E

F

REFLECTIVITIES - HARBOR SITE IV							
SAMPLE POINT NO.	ILLUMINATION		ILLUMINATION		REFLECTIVITY		DESCRIPTION OF SAMPLE POINT
	INCIDENT METER	REFLECTED METER	INCIDENT FT.-C	REFLECTED FT.-C	METER %	FT.-C %	
1	20.50	16.25	12,000	625	79.30	5.20	Concrete on Pier
2	20.50	14.33	12,000	173	70.00	1.40	Asphalt on Pier
3	20.50	15.00	12,000	260	73.20	2.20	Steel Nail on Pier
4	20.50	17.80	12,000	1800	86.80	15.00	Steel Cover Painted on Aluminum Pier
5	20.50	16.30	12,000	666	79.50	5.60	Yellow Dog on Pier
6	20.50	12.50	12,000	48	61.00	0.40	Water at South End of Pier
7	20.40	17.30	11,200	1333	84.80	11.90	Metal Hatch Painted - Aluminum on Roof
8	20.40	14.25	11,200	162	69.90	1.40	Rocks on Roof
9	20.40	16.25	11,200	625	79.70	5.60	Concrete Wall on Roof
10							Air
11	20.40	15.60	11,200	404	76.50	3.60	Conveyor Belt Cover
12	20.50	14.40	12,000	182	70.40	1.50	Asphalt Under Conveyor Belt
13	20.60	17.30	12,800	1333	84.00	10.40	Molasses Tank - Left
14	20.60	17.30	12,800	1333	84.00	10.40	Molasses Tank - Center
15	20.60	17.30	12,800	1333	84.00	10.40	Molasses Tank - Right
16	20.50	15.33	12,000	339	74.90	2.80	Concrete at Base of Tanks
TANK NO. 1	20.40	17.25	11,200	1250	84.60	11.20	Fuel Oil Tank Near Guard House
TANK NO. 2	20.50	17.33	12,000	1333	84.40	11.10	Fuel Oil Tank Near Guard House
BASE	20.50	14.90	12,000	182	72.80	1.50	Oiled Dirt at Base of Tanks
NEW ASPHALT	20.50	13.50	12,000	98	65.90	0.80	New Asphalt on Roads

## UNCALIBRATED RADIONETRIC DATA\*

## SITE #4

Temperature Station	Thermodynamic Temperature (T <sub>T</sub> )	Radiometric Temperature (T <sub>R</sub> )	Relative Emissivity (E <sub>R</sub> )**			
2 Asphalt Apron	41.0 °C	39.0 °C	0.976			
3 RR Track	44.0	37.0	0.914			
4 Conveyer Belt Cover	29.0	24.5	0.941			
5 Yellow Tie-Down (Doo)	27.0	25.0	0.972			
7 Rocks - Major Portion of Roof Composition	40.0	33.5	0.918	JUNE	SUNRISE	SUNSET
9 Concrete wall on Roof	35.0	33.5	0.980	24	5:42	8:00
13 Top of Molasses Tank (Left)	29.0	25.0	0.949	25	5:42	8:00
14 Top of Middle Molasses Tank	27.5	24.5	0.960	26	5:42	8:00
15 Top of Molasses Tank (Right)	29.0	27.0	0.972	27	5:43	8:00
16 Concrete Around Tanks	36.5	34.5	0.976	28	5:43	8:01
17 Fuel Storage Tank #1 (Top)	30.0	27.0	0.960	29	5:43	8:01
19 Fuel Storage Tank #2 (Top)	32.5	29.0	0.956	30	5:44	8:01
-- Aluminum Paint on Steel	43.0	30.0	0.846	JULY		
-- Aluminum Vent on Roof	35.0	28.0	0.912	1	5:44	8:01
-- Concrete Next to Water	37.5	35.5	.976	2	5:45	8:00
				3	5:45	8:00
				4	5:45	8:00

\*\*  $E_R = \frac{T_R^4}{T_T^4}$ ; where T<sub>R</sub> = Radiometric Temperature  
T<sub>T</sub> = Thermodynamic Temperature

\* Radiometric data were collected by a Stoll Hardy Model HL4 unfiltered radiometer with a 3-25 micron response. They are in error by an unknown amount due to reflected solar energy, therefore the emissivity values have relative merit only.

# GROUND TRUTH SURVEY

SITE NO. V

RAPID CONSTRUCTION

LUTHER TOWER

SAN DIEGO CALIFORNIA



STATINTL

STATINTL

SITE NUMBER V

Site Number V satisfied program requirements for an area under rapid construction. This site contains the future Luther Tower, a 14-story high-rise apartment building. The site is located at the Southeast corner of Beech and Second Streets, San Diego, California. The building is being constructed by the Roel Construction Company, the job being supervised by [REDACTED]

[REDACTED] ground data collection team consisted of [REDACTED]. Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorological, photographic, activity, and Munsell color data. Their basic equipment consisted of a [REDACTED] ground truth kit and communication equipment as described in the final project report.

Luther Tower, a reinforced concrete structure, had progressed through the 13th floor at the time of survey. Standard construction techniques for the most part were being employed. One special feature was the hauling crane situated on top of the structure. This crane could be used during the construction of three floors before it needed to be hoisted and repositioned.

Target units included fresh-poured concrete, construction forms, vehicles, and open stored raw materials. Activity was restricted to daylight hours which varied with concrete pouring schedules.

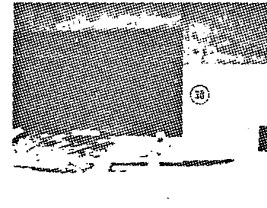
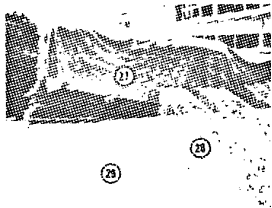
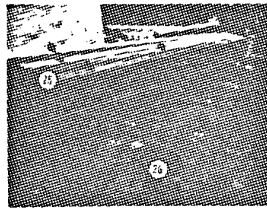
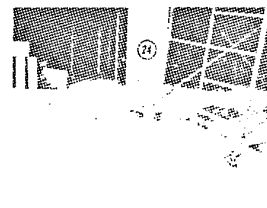
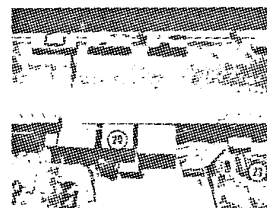
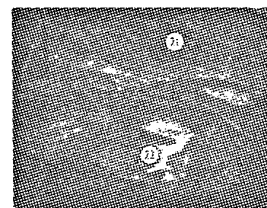
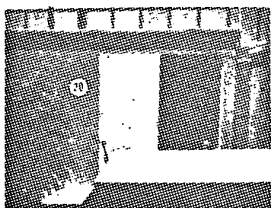
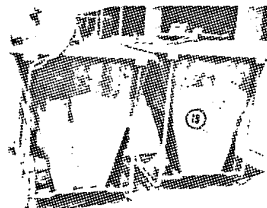
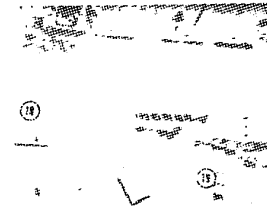
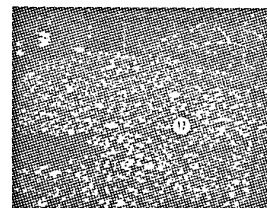
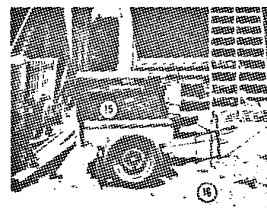
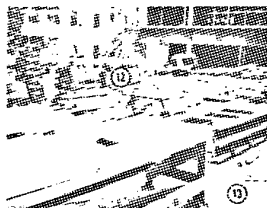
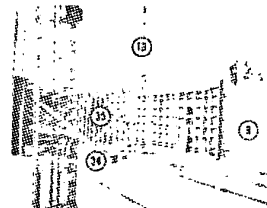
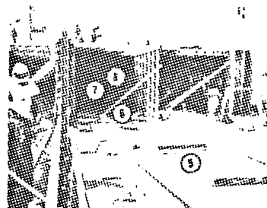
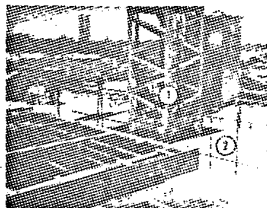
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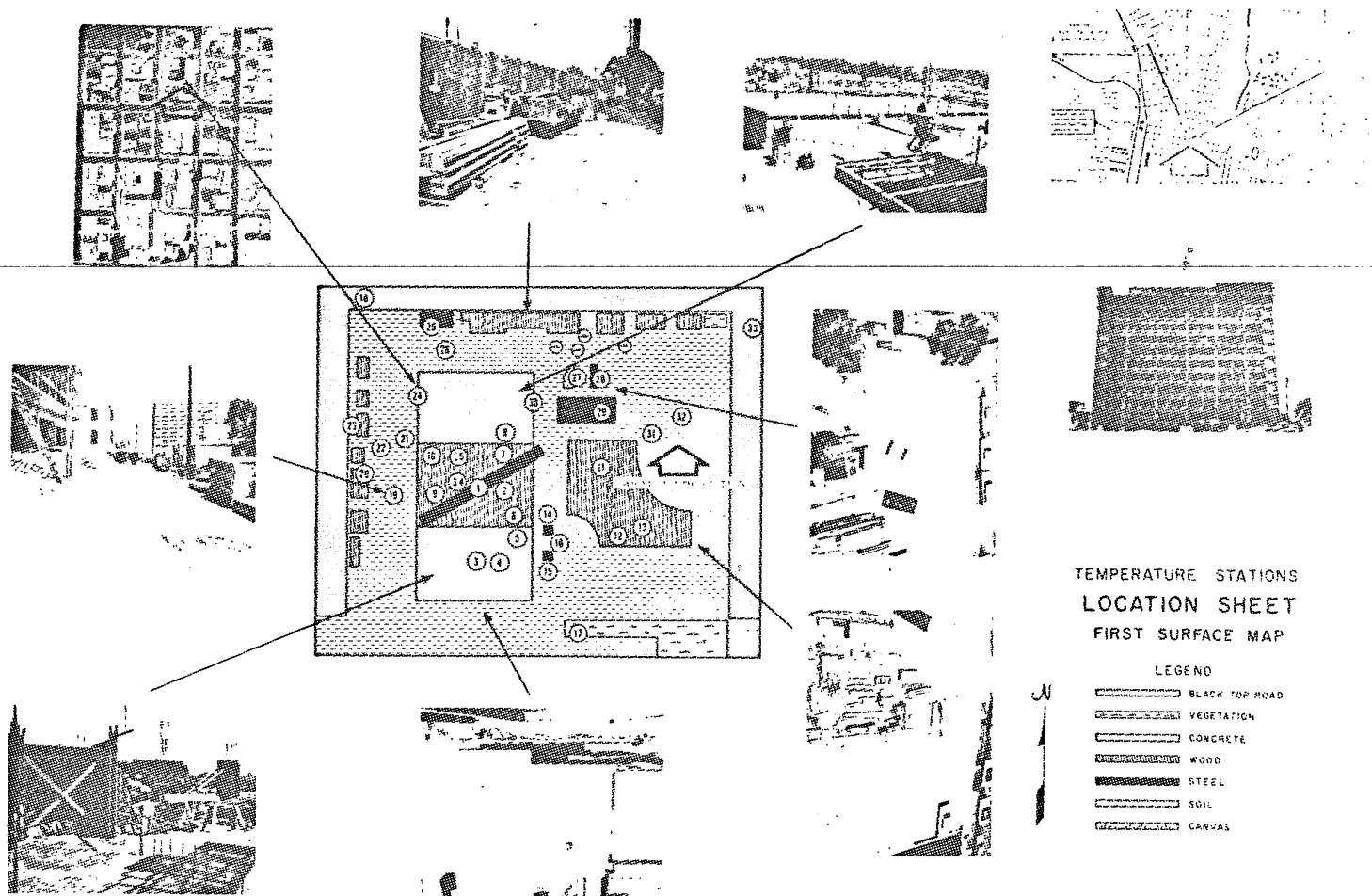
STATINTL

## TEMPERATURE STATIONS

<u>STATION NO.</u>	<u>DESCRIPTION</u>
1	Yellow Crane - 13th Floor
2	Plywood Near Crane
3	Steel (Concrete Reinforcement) Rock
4	Plywood Under Steel Rods
5	Concrete Floor - 12th Floor - South Section
6	Concrete Floor - 12th Floor - Center (South) Section
7	Concrete Floor - 12th Floor - Center (North) Section
8	Concrete Floor - 12th Floor - North Section
9	Plywood Upright Forms
10	Steel Upright Rods
11	Electric Saw
12	Stacks of Wood
13	Ground (Soil, Spilled Concrete, Gravel)
14	Compressor
15	Welder
16	Ground (Soil, Spilled Concrete, Gravel)
17	Vegetation - Ivy
18	Blacktop - Beech Street
19	Cement Pouring Buckets
20	Supervisor Shacks
21	Ground (Soil, Spilled Concrete, Gravel)
22	Spilled Concrete on Ground
23	Plywood Cement Forms
24	West Side of Building
25	Orange Colored "I" - Steel Beams
26	Ground (Soil, Spilled Concrete, Gravel)
27	Blue-Green Canvas Covering Steel Rods
28	Steel Reinforcement Rods
29	Ground (Soil, Spilled Concrete, Gravel)
30	East Side of Building
31	White Car in Parking Lot
32	Ground (Soil, Spilled Concrete, Gravel)
33	Blacktop on Third Street
34	13th Floor Cement
35	Plywood Near Cement

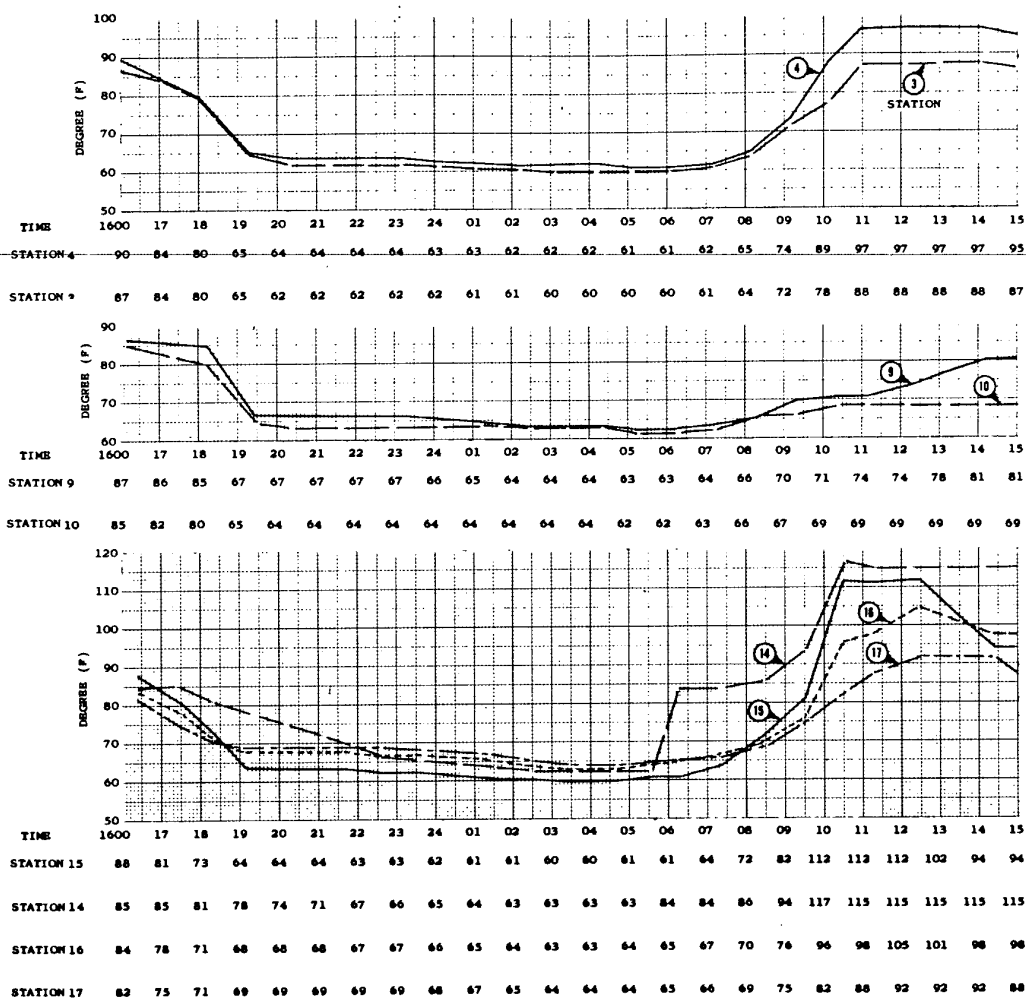
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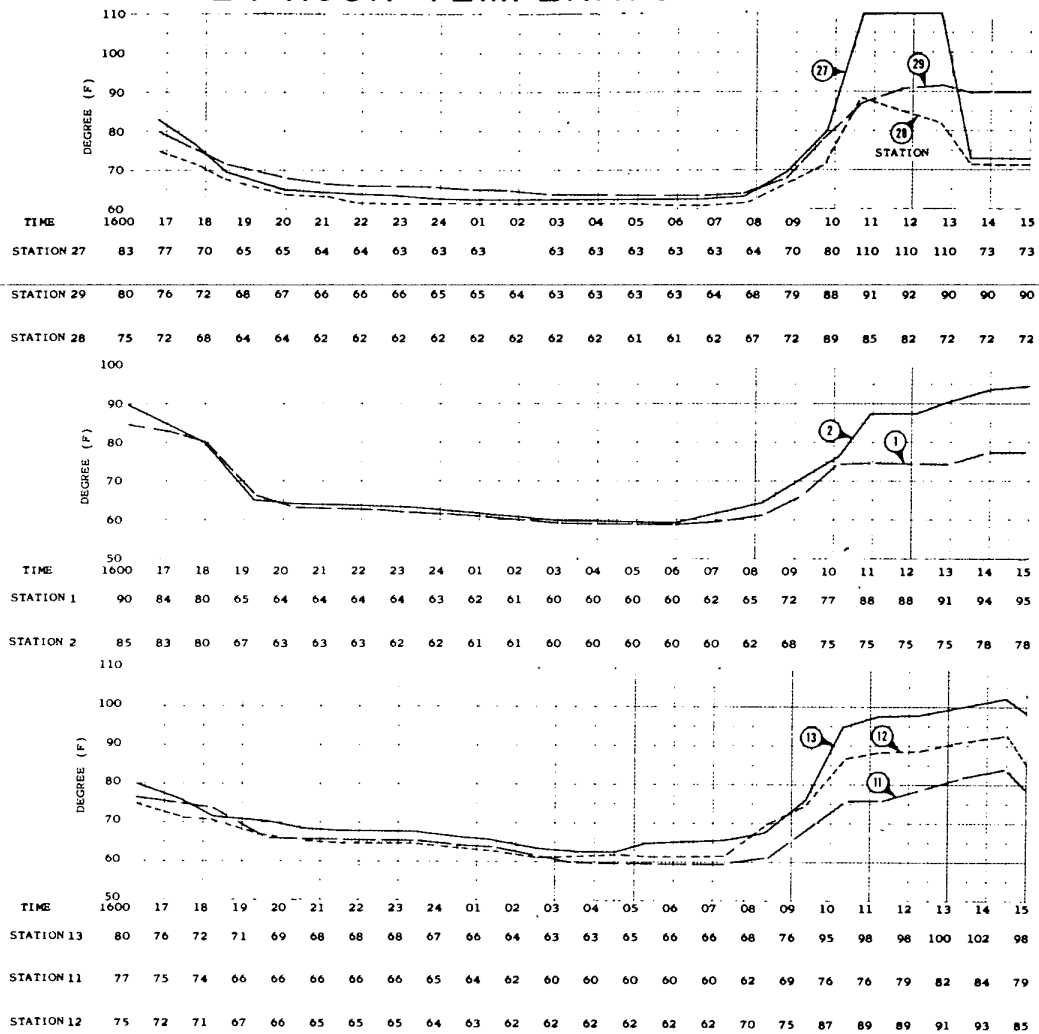


## 24 HOUR TEMPERATURE DATA

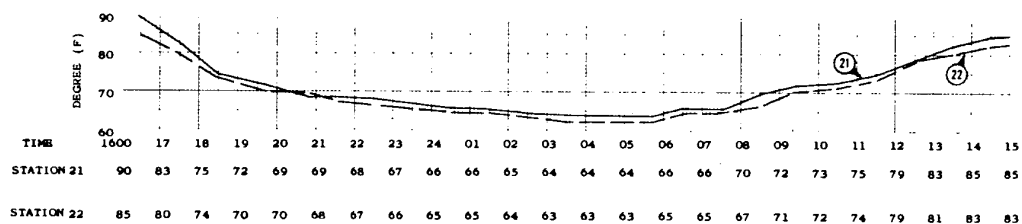
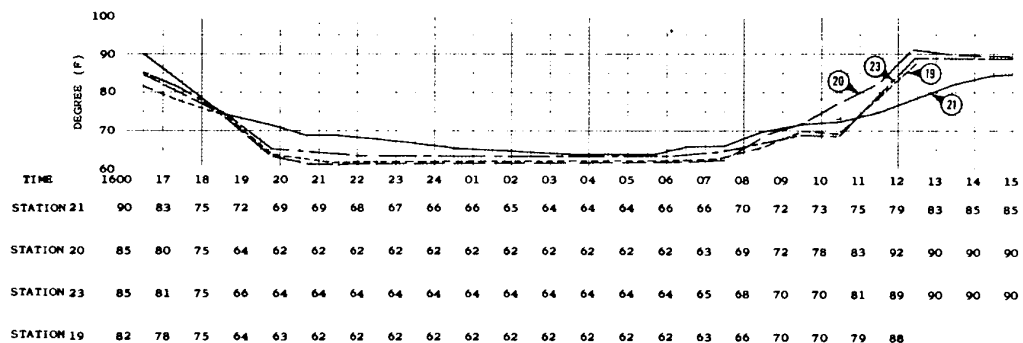
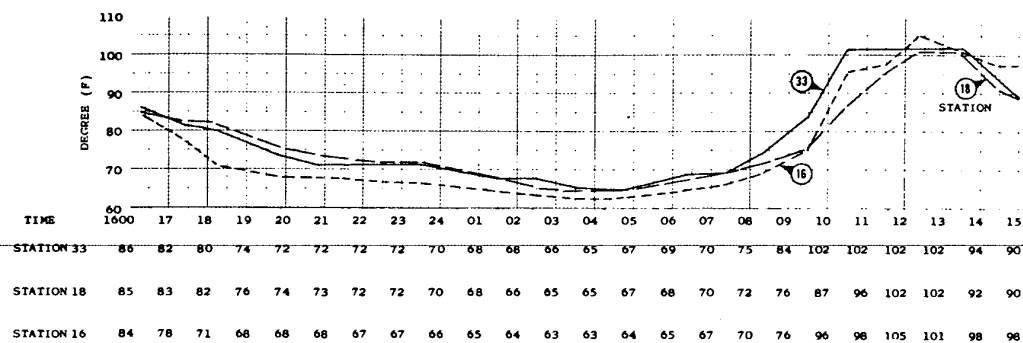
ALL TIMES PDT  
JUNE 25, 1964



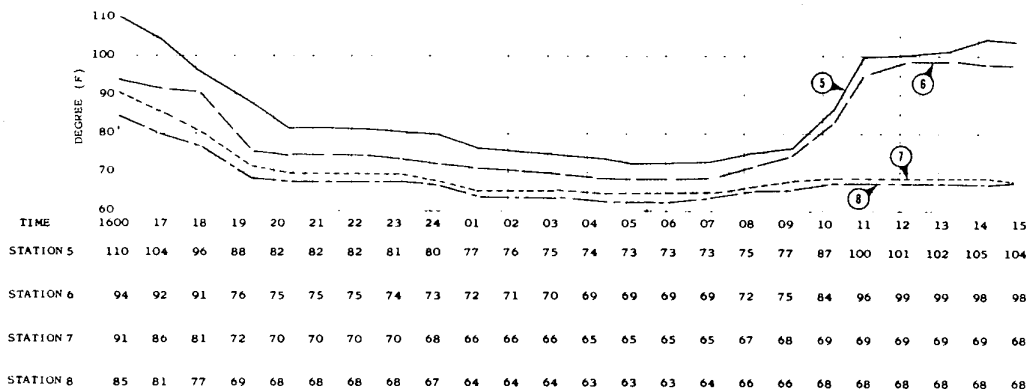
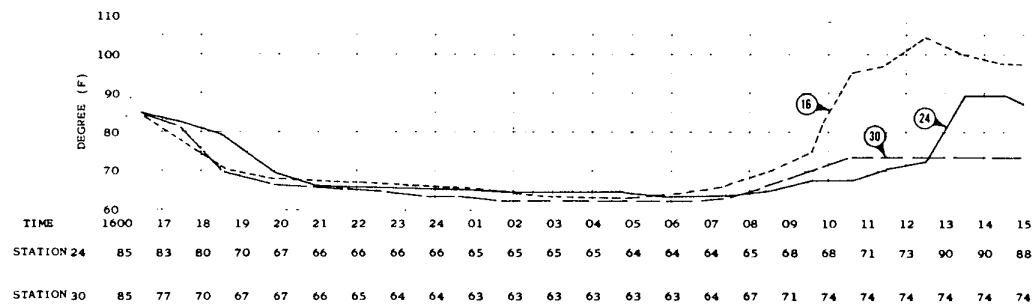
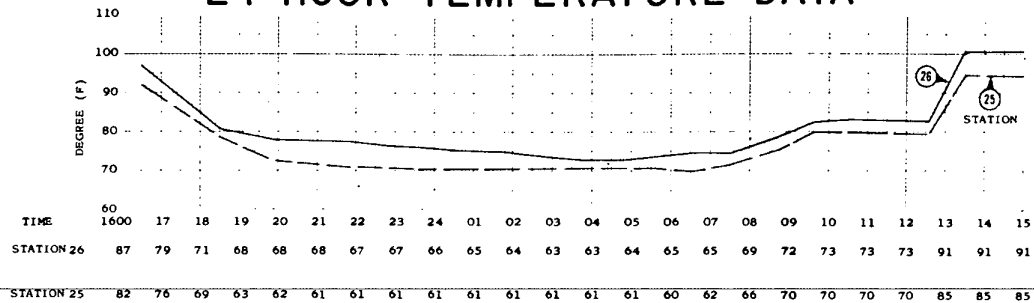
## 24 HOUR TEMPERATURE DATA



## 24 HOUR TEMPERATURE DATA



## 24 HOUR TEMPERATURE DATA





## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 6/26/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		1301	75	91	88	97	102	99	69	68	78	69	82	91	100	115	102	101	62	100		90	89	81	90	90	85	61	71	72	80	74	98	94	11		
		WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE																										
		1247	76		65	55		CALM		0	10		10																								

FLIGHT NO. 2 6/27/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2445	60	62	59	60							62	63	61	63	58	61	65	67	59	63	64	63	60	63	58	62	61	62	64	63	60	62	60		
		WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE																										
		0201	62		59	84		CALM		9	10		5																								

FLIGHT NO. 3 6/27/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		1420 1502	73 77	80 105	100 96	104 106					105 105	77 81	74 75	102 102	112 107	81 77	110 107	85 85	93 93	108 109	104 93	110 104	117 108	98 95	113 98	77 84	90 86	95 89	77 76	87 74	96 80	74 76	110 83	96 96	95 103		
		WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE																										
		1331 1443	74 78	63 66	54 53		CALM CALM		0	10 10		15 15																									

FLIGHT NO. 4 6/27/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2040 2145	60 60	62 60	62 60	62 60					61 61	61 62	66 62	64 64	66 65	66 61	68 59	68 68	70 66	70 68	70 60	67 64	66 66	67 66	72 64	71 65	61 59	64 62	64 62	64 62	66 64	65 63	61 60	66 64	70 68	61 61	
		WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE																										
		2023 2134	68 66	62 61	71 75		CALM CALM		0	10 10		15 10																									

FLIGHT NO. 5 6/28/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		0936 1035	77 79	88 91	85 85	89 92					100 100	82 84	65 72	84 87	88 91	110 112	118 116	105 113	92 98	78 87	70 70	69 76	69 72	69 72	69 73	65 69	80 80	87 87	106 95	90 90	95 93	80 80	98 96	95 93	95 93	100 100	
		WEATHER	TIME	TEMP. DRY	WET	REL. HUM.	WIND DIR. VEL.	CLOUD %	MAX. VIS.	CLOUD TYPE	BASE																										
		0928 1100	72 79	63 66	61 50		CALM NNE		4		0	10 10		15 15																							

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 6 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2220	60	60	60	61						61	61	63	63	64	62	59	68	69	68	64	65	64	67	62	65	60	62	62	63	64	64	64	63	68	61
	2320	59	59	59	59						61	61	63	63	64	62	59	62	69	67	63	63	65	64	62	64	60	61	62	60	62	64	57	62	68	61	61
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
2215	66		61		75		CALM		0/10		5																										
2315	66		61		75		CALM		0/10		5																										

FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		1055	79	86	86	86						90	88	73	90	104	100	94	97	95	84	77	87	68	68	69	69	78	80	90	88	92	79	90	93	93	87
	1216	80	88	86	78						96	89	74	105	105	123	129	113	102	92	88	107	74	72	81	75	75	74	102	88	95	76	90	95	101	107	103
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
1049	76		64		51		CALM		0/10		15																										
1207	80		66		47		CALM		0/10		15																										

FLIGHT NO. 8 6/30/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2157	60	63	67	67					68	62	65	69	66	66	70	63	64	69	72	66	65	64	65	66	66	64	65	64	64	64	66	63	64	68	67
	2315	59	60	59	66					65	59	60	64	61	64	62	60	64	69	66	63	63	64	65	66	64	59	64	64	64	66	63	64	68	67	68	
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
2145	65		61		80		N		8		0/10		5 H																								
2306	64		60		79		NW		4		0/10		10 H																								

FLIGHT NO. 9 6/30/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		1243	81	90	103	103						90	83	87	94	96	101	110	118	94	80	83	85	103	88	90	90	94	100	106	86	93	74	118	102	120	119
	1402	74	82	83	82						101	83	90	96	98	106	113	122	85	82	84	87	105	90	89	80	95	103	76	78	102	80	90	96	98	106	100
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
1227	78		65		49		NW		6		0/10		15																								
1356	81		67		48		NW		3		0/10		15																								

FLIGHT NO. 10 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2402	63	63	63	63						63	64	65	61	64	62	60	64	69	65	61	62	63	64	62	65	64	64	63	63	66	65	58	64	67	64
	0117	62	62	62	62						62	63	63	61	62	61	60	63	67	63	78	61	62	63	62	63	63	63	62	62	64	64	58	63	64	63	62
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
2355	63		60		84		NNW		3		6/10		5																								
0115	63		60		84		CALM		3		0/10		5 H		CUMULUS 1500																						

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 11 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		1155	75	79	75	75					94	87	80	87	97	123	122	102	92	92	66	84	72	79	86	71	70	71	110	90	97	74	112	96	95	79	78
	WEATHER	TIME	TEMP. DRY WET		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
		1125	77	64	48	NW	6	0/10	15																												

FLIGHT NO. 12 7/1/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2055	62	76	67	71					67	67	74	69	68	68	65	68	72	68	64	65	70	69	67	69	65	67	67	67	66	69	63	65	70	72	76
		2200	61	72	65	69					66	65	65	68	67	64	63	68	65	65	64	63	66	65	66	67	63	64	64	63	64	67	59	64	65	67	67
WEATHER	TIME	TEMP. DRY WET		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																							
		2047	70	62	64	CALM	0/10	10	SLIGHT HAZE																												

FLIGHT NO. 13 7/2/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		1410	78	101	97	104					102	82	88	104	106	107	110	126	109	87	82	92	102	96	100	78	90	93	90	86	103	82	87	102	111	102	97
	WEATHER	TIME	TEMP. DRY WET		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
		1335	80	66	45	CALM	0/10	15																													

FLIGHT NO. 14 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		0230	64	64	67	65					62	64	65	62	64	64	58	64	62	68	64	61	64	63	64	66	59	64	66	65	64	65	76	67	66	70	71
	WEATHER	TIME	TEMP. DRY WET		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
		0225	63	62	95	CALM	0/10	5 H																													

FLIGHT NO. 16 7/3/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
		2130	67			69										64												69					60				
	WEATHER	TIME	TEMP. DRY WET		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE																						
		2150	65	61	80	CALM	0/10	15																													

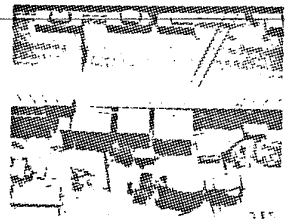
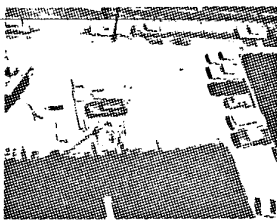
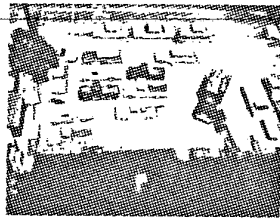
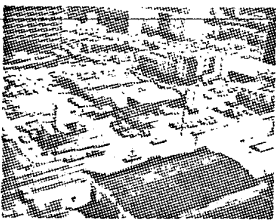
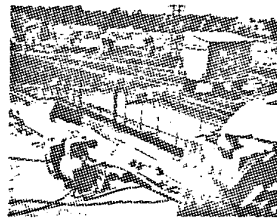
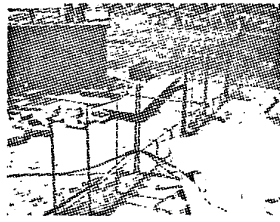
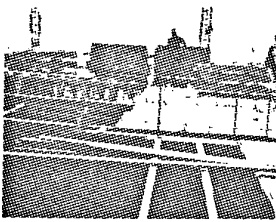
Daily Activity Log, Friday June 26, 1964 (Time 1500)

- A. Note plywood forms on 13th floor being readied for pouring of cement. Compare with Monday (B).
- B. Note newly poured cement wall and steel rods that will reinforce 13th cement floor. Compare with Monday (A).
- C. Steel rods, plywood forms and gasoline motor on 13th floor.
- D. Plywood forms for 13th floor walls. Compare with Tuesday (B).
- E. Parking lot (Ash St.). Compare with Saturday (E) and Sunday (C).
- F. Parking lot (Third St.). Compare with Sunday (A).
- G. Church parking lot (Third St.). Compare with Saturday (D) and Sunday (B).
- H. Note Ready-Mix concrete and buckets.

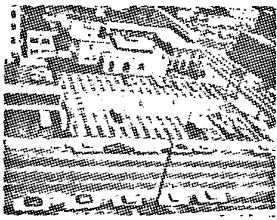
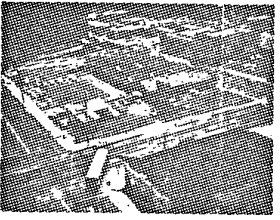
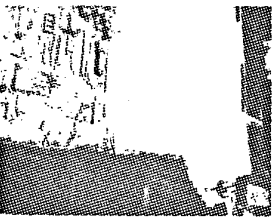
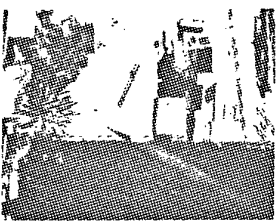
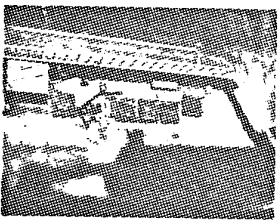
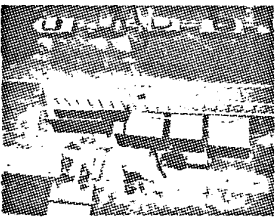
Daily Activity Log, Saturday June 27, 1964 (Time 1400)

- A. Supervisor shacks (Second St.). Compare with Friday (E).
- B. Plywood forms (Second St.). Compare with Wednesday (E).
- C. Lumber, steel reinforcement rods and trees. Compare with Wednesday (D).
- D. Church parking lot (Third St.). Compare with Friday (G) and Sunday (B).
- E. Parking lot (Ash St.). Compare with Friday (E) and Sunday (C).
- F. Parking lot (Third St.). Compare with Sunday (E) and Tuesday (E).

## DAILY ACTIVITY LOG



FRIDAY  
JUNE 26, 1964



SATURDAY  
JUNE 27, 1964

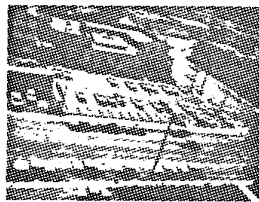
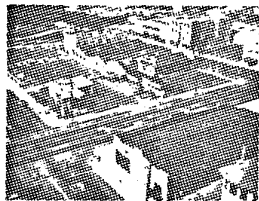
Daily Activity Log, Sunday June 28, 1964 (Time 0945)

- A. Parking lot (Third St.). Compare with Friday (F).
- B. Church parking lot (Third St.). Compare with Friday (G).
- C. Parking lot (Ash St.). Compare with Friday (E) and Saturday (E).
- D. Intersection of Third and Beech.
- E. Parking lot (Third St.). Compare with Saturday (F) and Tuesday (E).
- F. Intersection of Third and Beech.

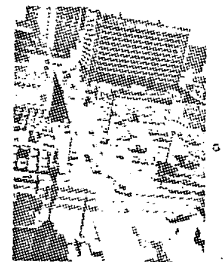
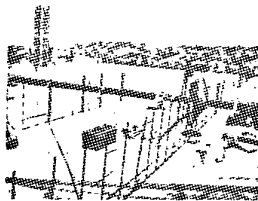
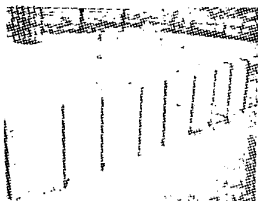
Daily Activity Log, Monday June 29, 1964 (Time 1100)

- A. 13th Floor, new cement. Compare with Friday (B).
- B. 13th Floor, new cement. Compare with Friday (B).
- C. 13th Floor, new cement. Compare with Friday (B).
- D. Supervisor shacks. Compare with Friday (H).
- E. Parking lot (Ash St.). Compare with Sunday (C) and Saturday (E).
- F. Plywood cement forms (Second St.). Compare with Saturday (B).
- G. Parking lot (Ash St.). Compare with Sunday (C).

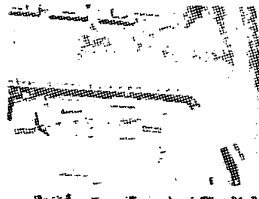
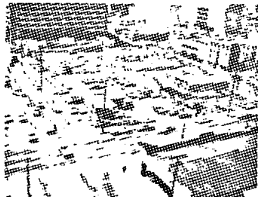
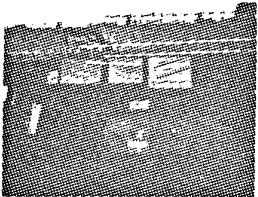
# DAILY ACTIVITY LOG



SUNDAY  
JUNE 28, 1964



MONDAY  
JUNE 29, 1964



Daily Activity Log, Tuesday June 30, 1964 (Time 1400)

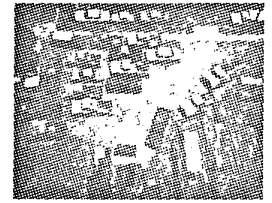
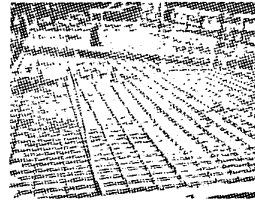
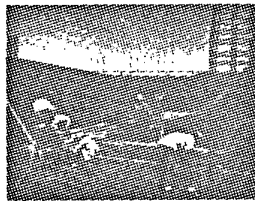
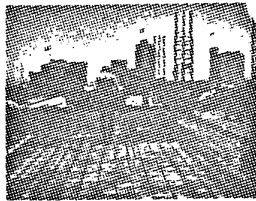
- A. Steel rods on 13th floor. Compare with Monday (C).
- B. Wall plywood forms on 14th floor. Compare with Monday (C).
- C. Steel rods on 13th floor. Compare with Monday (C).
- D. Second Street. Compare with Monday (C).
- E. Parking lot (Third St.). Compare with Sunday (E) and Saturday (F).
- F. Time photo taken (2350) Third St., construction supplies.
- G. Parking lot (Second St.). Compare with Wednesday (C).

Daily Activity Log, Wednesday July 1, 1964 (Time 1200)

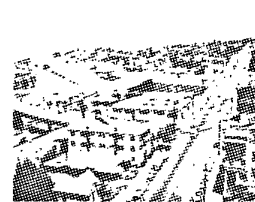
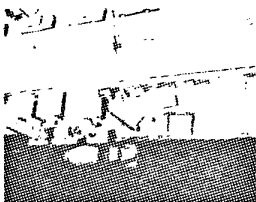
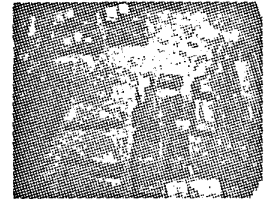
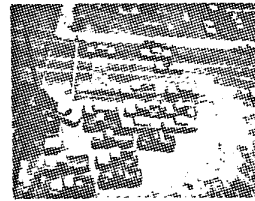
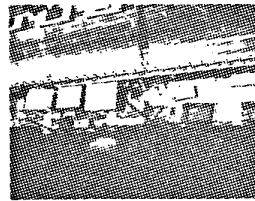
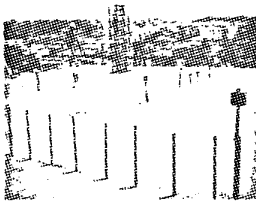
- A. New cement (13th floor). Compare with Tuesday (C).
- B. Second St. Compare with Monday (D).
- C. Third St. Compare with Sunday (A).
- D. PARKING LOT SECOND ST. COMPARE WITH TUESDAY (G)
- E. Second St. Compare with Tuesday (D).
- F. Parking lot, Third St. Compare with Tuesday (E).
- G. Freeway north of site.
- H. Parking lot (Second St.). Compare with (E).



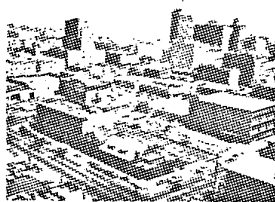
# DAILY ACTIVITY LOG



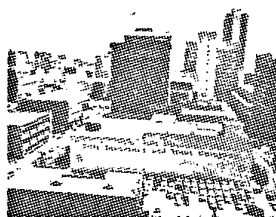
TUESDAY  
JUNE 30, 1964



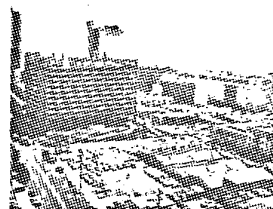
WEDNESDAY  
JULY 1, 1964



A



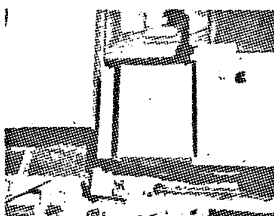
B



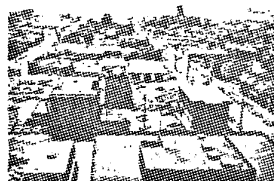
C



D



E



F

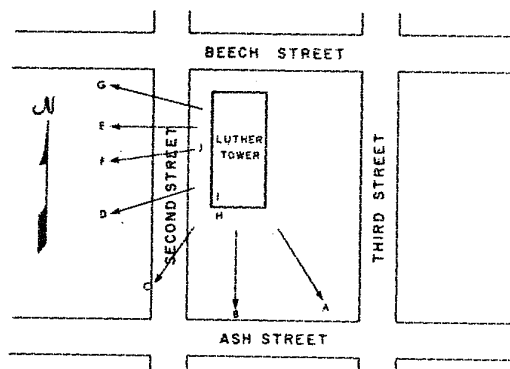


G



H

### 180° PANORAMIC

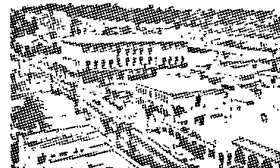




A



B

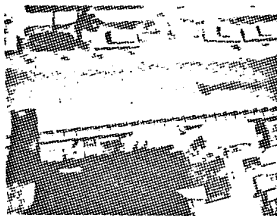
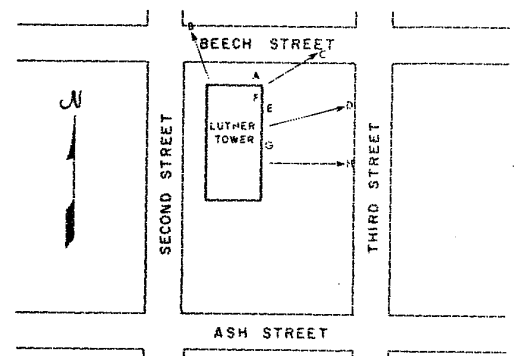


C



D

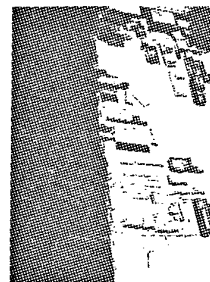
### 180° PANORAMIC



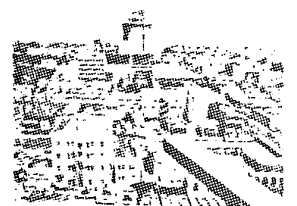
E



F



G



H

## UNCALIBRATED RADIOMETRIC DATA\*

SITE #5

Temperature Station	Thermodynamic Temperature ( $T_T$ )	Radiometer Temperature ( $T_R$ )	Relative Emissivity ( $E_R$ )**	SUNRISE & SUNSET (PDT)		
1 Crane	27.0 °C	21.7 °C	0.929			
2 Plywood Near Crane	33.0	31.0	0.974			
17 Ground Under Vegetation	35.0	35.0	1.000	JUNE	SUNRISE	SUNSET
18 Thick Asphalt on Beach Street	321.5	31.0	0.956	24	5:42	8:00
25 "I" Beam	29.0	34.0	0.936	25	5:42	8:00
27 Canvas Cover	40.5	42.0	1.021	26	5:42	8:00
33 Asphalt	317.0	315.0	0.976	27	5:43	8:01
34 New Concrete	47.0	41.0	0.970	28	5:43	8:01
-- Sidewalk Concrete	317.5	313.0	0.945	29	5:43	8:01
-- Tan Car Top	321.0	317.0	0.977	30	5:44	8:01
				JULY		
				1	5:44	8:01
				2	5:45	8:00
				3	5:45	8:00
				4	5:45	8:00

\*\*  $E_R = \frac{T_R^4}{T_T^4}$  where  $T_R$  = Radiometric Temperature  
 $T_T$  = Thermodynamic Temperature

\* Radiometric data were collected by a Stoll-Hardy Model HL 4 unfiltered radiometer with a 3-25 micron response. They are in error by an unknown amount due to incident solar energy; therefore, the emissivity values have relative merit only.

# GROUND TRUTH SURVEY

SITE NO. VI

MILITARY STORAGE AREA

NAVAL STATION

SAN DIEGO CALIFORNIA

STATINTL

STATINTL

SITE NUMBER VI

Site Number VI satisfied program requirements for a military storage area. The site is located at U. S. Naval Station near 32nd Street on U. S. 101, San Diego, California. Contact for the site was Mr. [redacted] USN.

[redacted] ground data collection team consisted of [redacted]. Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorologic, photographic, activity, and Munsell color data. Their basic equipment consisted of [redacted] ground truth kit and communication equipment described in the final project report.

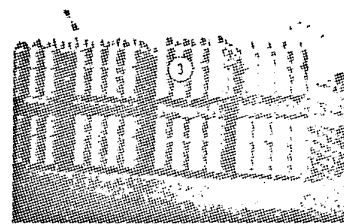
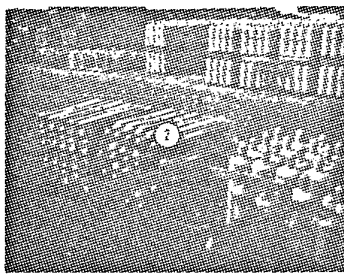
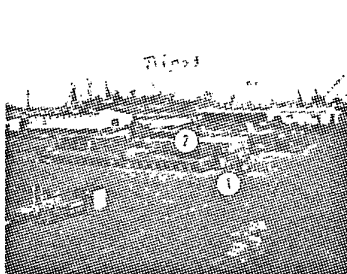
Target sub-units monitored include oxygen and acetylene, carbon dioxide gas cylinders, sheet steel, galvanized iron, lumber, and radar antennas stored in open areas. Activity in this area was concentrated during daylight hours, Monday through Friday with very little weekend activity.

STAT

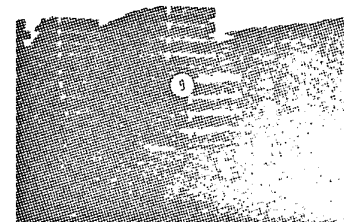
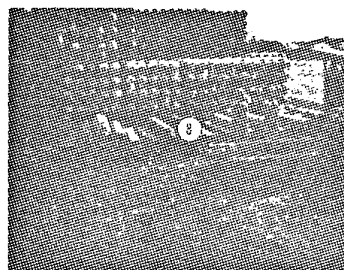
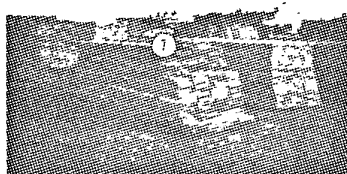
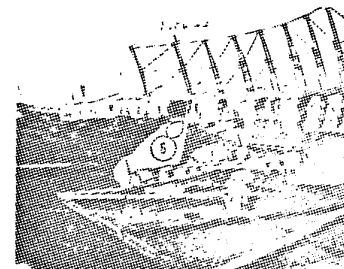
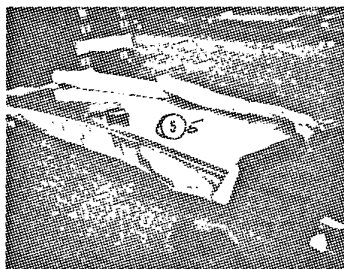
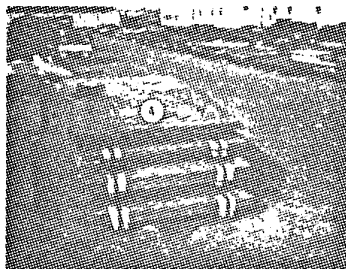
STATINTL

### TEMPERATURE STATIONS

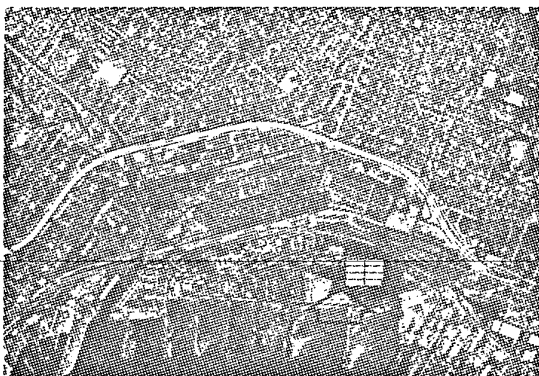
<u>STATION NO.</u>	<u>DESCRIPTION</u>
1	Asphalt
2	Gray Carbon Dioxide Bottles
3	Yellow Acetylene Bottles
4	Sheet Steel (4' x 8')
5	Sheets of Galvanized Iron
6	Gray Radar Antenna on Asphalt
7	Pine Lumber Stacks
8	Green Oxygen Bottles
9	Green Oxygen Bottles
10	Railroad Track
11	Aluminum Warehouse
12	Galvanized Iron (open) Shed



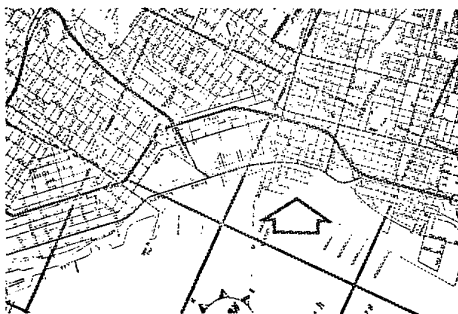
## TEMPERATURE STATION IDENTIFICATION





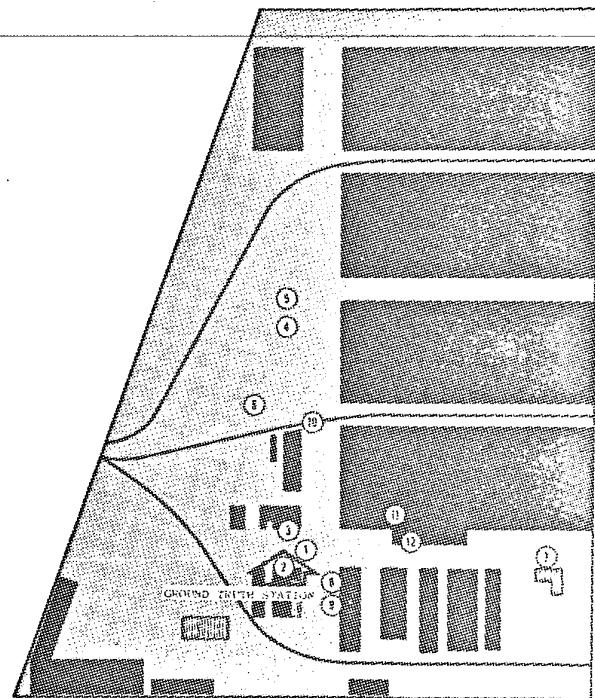


TEMPERATURE STATIONS  
LOCATION SHEET  
FIRST SURFACE MAP

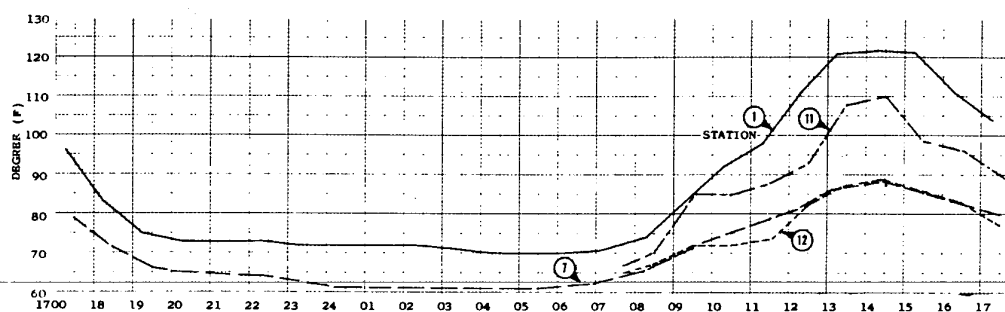


LEGEND

- BLACK TOP
- METAL
- SOIL

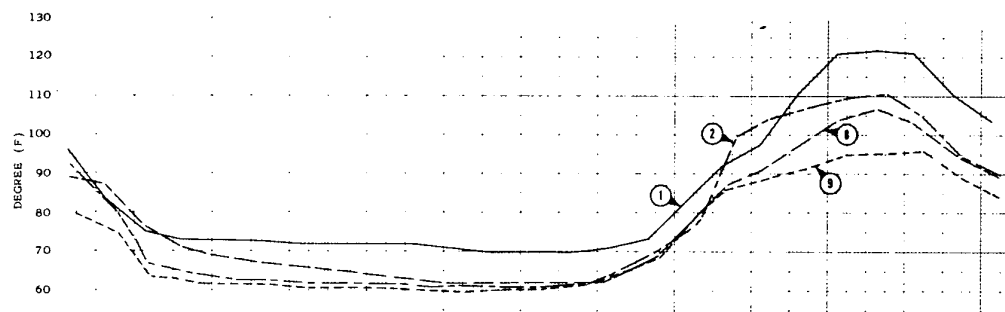


## 24 HOUR TEMPERATURE DATA



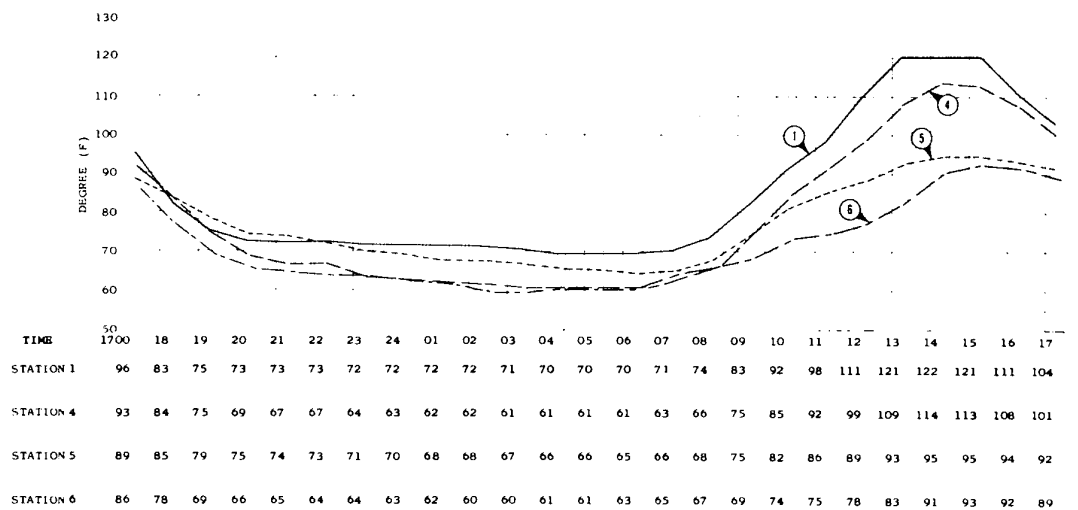
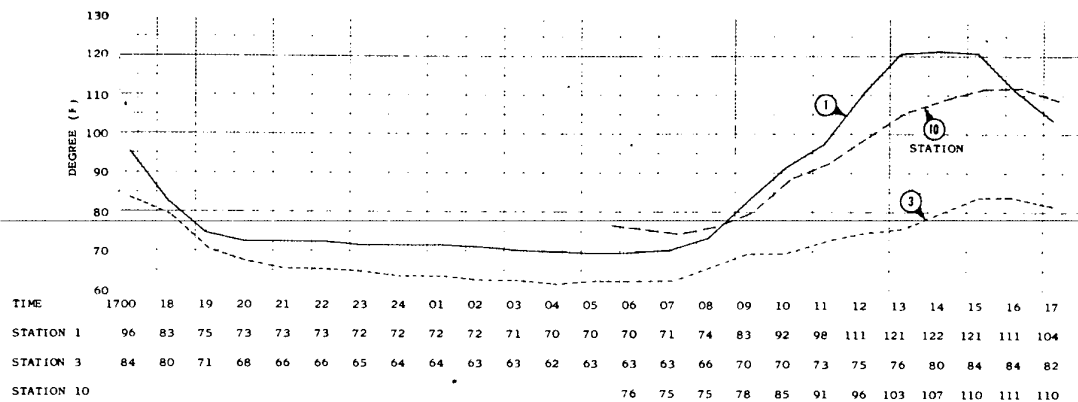
ALL TIMES P.D.T.  
JUNE 25, 1964

TIME	1700	18	19	20	21	22	23	24	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
STATION 1	96	83	75	73	73	73	72	72	72	72	71	70	70	70	71	74	83	92	98	111	121	122	121	111	104
STATION 7	79	72	66	65	65	64	63	61	61	61	61	61	61	62	64	67	72	76	79	82	87	88	86	83	80
STATION 11																									
STATION 12																									



TIME	1700	18	19	20	21	22	23	24	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17
STATION 1	96	83	75	73	73	73	72	72	72	72	71	70	70	70	71	74	83	92	98	111	121	122	121	111	104
STATION 8	90	80	67	64	63	63	62	62	62	61	61	61	61	62	65	70	86	99	104	107	109	111	105	96	90
STATION 2	89	87	76	71	69	67	66	65	64	63	62	62	62	62	63	67	77	87	91	98	104	107	103	96	90
STATION 9	80	75	64	62	62	62	61	61	61	60	60	61	61	62	64	68	80	86	89	92	95	96	96	89	84

## 24 HOUR TEMPERATURE DATA



## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1215	111	98	75	99	89	78	82	107	97	99	93	82		
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		1315	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
			1315	68	62	71	WNW	5	0/10	5 H						

FLIGHT NO. 2 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1312	70	61	63	60	59	62	60	58	58	80	59	59		
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		1347	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
			1347	64	61	64	CALM	1	10	10						

FLIGHT NO. 3 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1415	110	92	71	102	93	84	89	109	97	111	90	88	94	
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		1410	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
			1410	66	61	75	SW	10	0/10	5						

FLIGHT NO. 4 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2006	72	68	66	68	75	63	63	60	61	89	61	62	67	
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		2025	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
			2025	61	60	94	SW	2	8/10	5						

FLIGHT NO. 5 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1341	95	87	67	84	81	75	79	100	90	87	92	70	76	
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		1003	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
			1003	69	63	72	W	2	0/10	5 H						

FLIGHT NO. 6 6/28/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2235	73	63	64	62	72	60	58	56	58	83	56	59	61	
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		2307	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
		2206	63	60	84	CALM	0/10	10								

FLIGHT NO. 7 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1108	115	97	84	104	89	88	87	116	95	97	107	96	91	
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		1205	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
		1145	70	62	64	WNW	6	0/10	5							

FLIGHT NO. 8 6/29/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		2146	71	66	64	66	74	63	64	58	60	86	59	60	65	
	WEATHER	TIME	TEMP.	REL.	WIND	CLOUD	MAX.	CLOUD								
		2222	DRY	WET	HUM.	DIR. VEL.	%	VIS.	TYPE	BASE						
		2220	70	65	63	64	73	60	61	57	59	84	57	58	64	
			2220	64	61	84	N	2	0/10	10						

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 9 6/30/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1230	118	108	90	118	97	103	90	119	106	115	112	102	102	
		1315	122	108	90	123	97	102	91	120	109	115	111	101	105	
FLIGHT NO. 10 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		017	69	61	62	59	69	59	61	55	57	81	55	56	61	
		0118	66	59	60	57	68	57	59	53	55	79	53	53	60	
FLIGHT NO. 11 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1149	115	104	89	106	91	90	89	115	103	103	107	97	96	
		1224	116	105	88	110	95	92	90	115	104	106	107	94	97	
FLIGHT NO. 12 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		058	75	69	66	68	70	62	64	59	61	92	59	60	68	
		0157	72	66	64	64	74	59	63	57	59	89	57	58	65	
FLIGHT NO. 13 7/2/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1332	120	111	89	110	104	94	89	112	107	110	108	64	107	
		1448	121	111	87	116	107	96	92	111	104	118	106	95	107	
FLIGHT NO. 14 7/2/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0223	69	61	62	59	69	59	61	58	58	79	57	58	62	
		0328	67	60	61	57	67	58	50	57	57	77	56	56	60	
FLIGHT NO. 15 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		406	118	106	87	113	106	97	91	118	106	118	108	105	104	
		1528	118	105	88	111	105	90	89	109	103	120	109	102	102	
FLIGHT NO. 16 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0115	73	64.5	59	W	W	W	W	W	W	W	W	W	W	
		0115	73	64.5	59	W	W	W	W	W	W	W	W	W	W	
FLIGHT NO. 16 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0118	72	67	64	65	74	61	63	60	59	89	59	59	67	
		2115	65	61	80	W	W	W	W	W	W	W	W	W	W	

FLIGHT NO. 9 6/30/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1230	118	108	90	118	97	103	90	119	106	115	112	102	102	
		1315	122	108	90	123	97	102	91	120	109	115	111	101	105	
FLIGHT NO. 10 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		017	69	61	62	59	69	59	61	55	57	81	55	56	61	
		0118	66	59	60	57	68	57	59	53	55	79	53	53	60	
FLIGHT NO. 11 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1149	115	104	89	106	91	90	89	115	103	103	107	97	96	
		1224	116	105	88	110	95	92	90	115	104	106	107	94	97	
FLIGHT NO. 12 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		058	75	69	66	68	70	62	64	59	61	92	59	60	68	
		0157	72	66	64	64	74	59	63	57	59	89	57	58	65	
FLIGHT NO. 13 7/2/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		1332	120	111	89	110	104	94	89	112	107	110	108	64	107	
		1448	121	111	87	116	107	96	92	111	104	118	106	95	107	
FLIGHT NO. 14 7/2/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0223	69	61	62	59	69	59	61	58	58	79	57	58	62	
		0328	67	60	61	57	67	58	50	57	57	77	56	56	60	
FLIGHT NO. 15 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		406	118	106	87	113	106	97	91	118	106	118	108	105	104	
		1528	118	105	88	111	105	90	89	109	103	120	109	102	102	
FLIGHT NO. 16 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0115	73	64.5	59	W	W	W	W	W	W	W	W	W	W	
		0115	73	64.5	59	W	W	W	W	W	W	W	W	W	W	
FLIGHT NO. 16 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14
		0118	72	67	64	65	74	61	63	60	59	89	59	59	67	
		2115	65	61	80	W	W	W	W	W	W	W	W	W	W	

DAILY ACTIVITY LOG

Friday, June 26, 1964

Activity at time of first flight included empty carbon dioxide containers being added to those on platform at base station. (All bottles on the platform are upright.) Some movement of trucks, etc., elsewhere in yard; much movement of sheet steel, etc., in north part of yard during the day; most of the steel is rusty and/or rust-spotted.

Saturday, June 27, 1964

Activity was mostly in north section, loading a "screw." Large crane moved into north area this morning.

Sunday, June 29, 1964

Some activity in yard; new trucks in yard.

Tuesday, June 30, 1964

Much activity in yard, mostly pickups and lifts.

Wednesday, July 1, 1964

(0130 hrs) - Dew forming on objects; boxcar in north part of yard during the previous day-run is gone

(1200 hrs) - Flatbed moved around to southwest of yard; several trucks moved out; train engine movement at 1216 hrs with boxcars and boxcars; a large boat on a flat bed sits in the steel area.

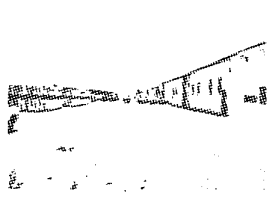
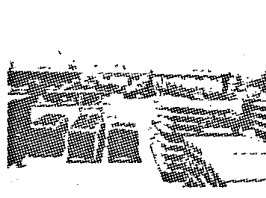
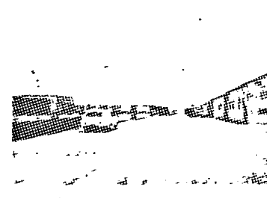
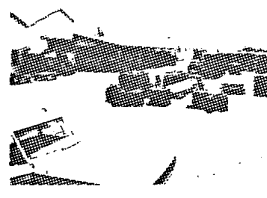
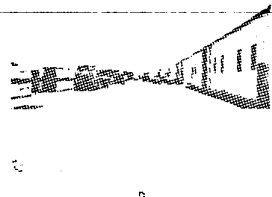
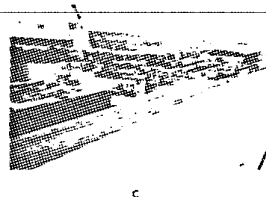
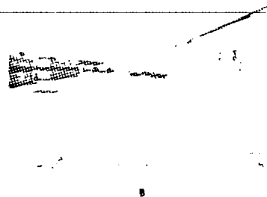
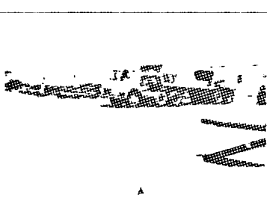
Thursday, July 2, 1964

Trucks moving in yard at time of flyover; oil burning at fire fighters school.

SITE VI

- A. June 27, 1964 - 1425  
North section showing ship screw about to be moved
- B. June 27, 1964 - 1440
- C. June 27, 1964 - 1450  
Yard activity N of site
- D. June 29, 1964 - 1145  
View N showing trucks at time of flyover.
- E. June 29, 1964 - About 1200  
Results of some morning activity (movement of  
bottles, etc.)
- F. June 30, 1964  
Yard, 1233
- G. June 30, 1964 - 1308  
The truck in center moved in between passes B and C
- H. June 30, 1964 - 1310  
Yard at time of Charlie flight. Truck in center  
is moving

## DAILY ACTIVITY LOG





SITE VI

- A. July 1, 1964  
Yard before moving  
Truck in foreground moved at 1147  
"A" pass, 1158
- B. June 30, 1964 - 1422  
Truck in foreground (center) moved from S area  
between flights 2 and 3 (extra passes after regular  
run). Truck in center is not moving here (all  
vehicles are still
- C. June 30, 1964 - 1419  
Between special passes 2 and 3  
A truck was in the foreground and moved to SW  
side of area between flights 1 and 2
- D. July 1, 1964 - 1217  
Truck movement in yard between passes B and C
- E. July 1, 1964
- F. June 27, 1964  
Bottles removed after first day and replaced  
by grey bottles

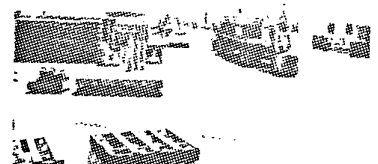
## DAILY ACTIVITY LOG



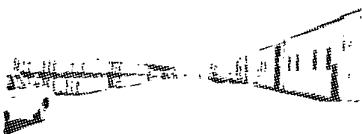
A



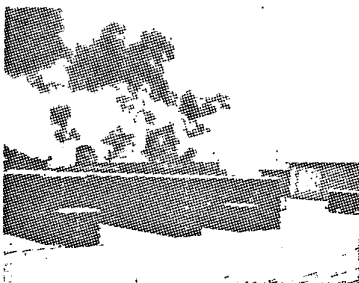
B



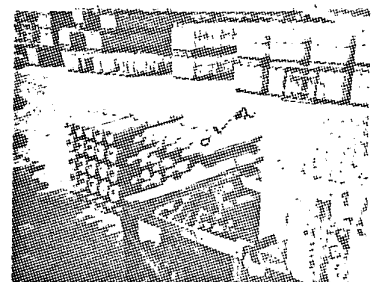
C



D

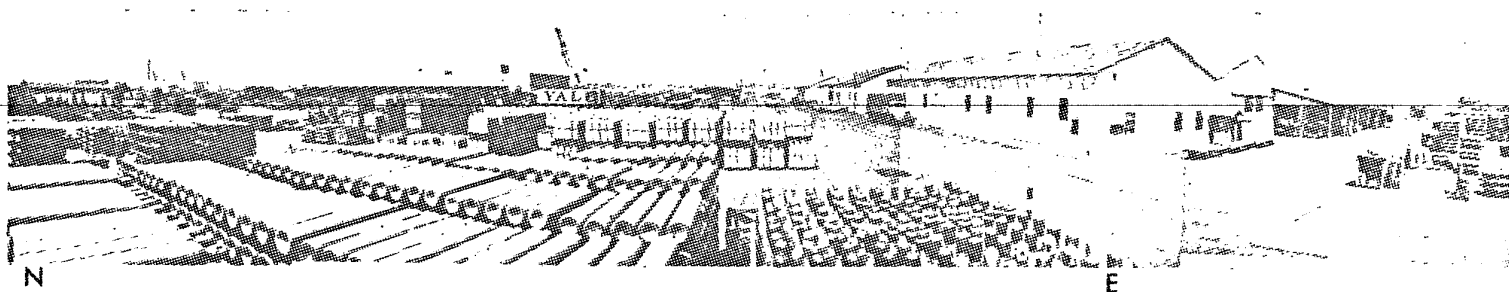


E

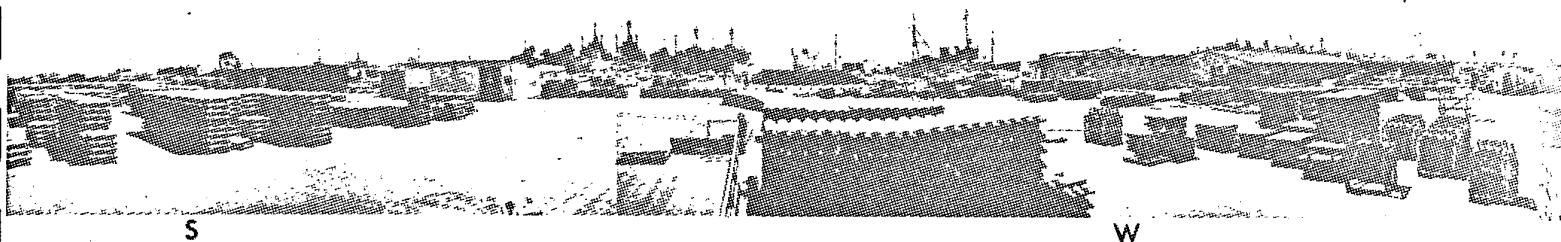


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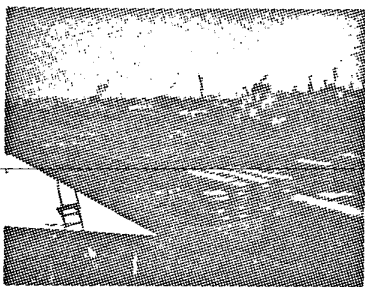
## 360° PANORAMIC



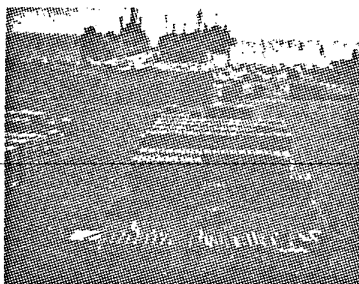
PHOTOGRAPHS TAKEN FROM THE  
GROUND TRUTH STATION



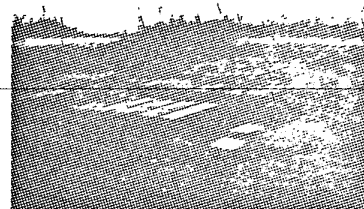
## SITE PHOTOGRAPHY



A



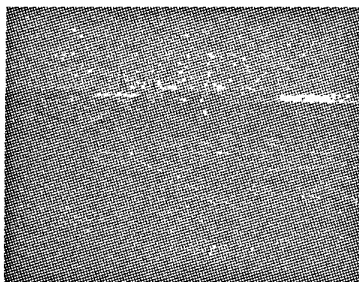
B



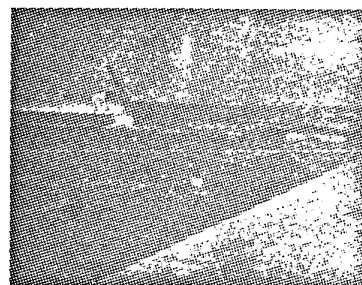
C



D



E



F

## UNCALIBRATED RADIOMETRIC DATA\*

SITE 6

Temperature Station	Thermodynamic Temperature ( $T_T$ )	Radiometric Temperature ( $T_R$ )	Relative Emissivity ( $E_R$ )**			
1 Asphalt	47.0 °C	45.0 °C	0.976			
2 Gray Carbon Dioxide Bottles	41.0	33.5	0.908			
3 Orange Acetylene Bottles	30.0	24.0	0.922	JUNE	SUNRISE	SUNSET
4 Sheet Steel (4' x 8')	46.0	37.5	0.843	24	5:42	8:00
5 Galvanized Iron	40.5	20.5	0.767	25	5:42	8:00
6 Gray Radar Antenna	33.0	31.0	0.972	26	5:42	8:00
7 Pine Lumber Stacks	36.0	29.0	0.912	27	5:43	8:00
8 Green Oxygen Bottles	42.0	37.0	0.937	28	5:43	8:01
9 Green Oxygen Tanks	37.0	34.5	0.968	29	5:43	8:01
10 RR Track	45.2	33.0	0.854	30	5:44	8:01
11 Aluminum Painted				JULY		
Galvanized Iron				1	5:44	8:01
Open Shed	31.0	26.0	0.937	2	5:45	8:00
Aluminum Red Bldg.	42.5	31.0	0.863	3	5:45	8:00
				4	5:45	8:00

\*\*  $E_R = \frac{T_R - 4}{T_T - 4}$  where  $T_R$  = Radiometric Temperature  
 $T_T$  = Thermodynamic Temperature

\* Radiometric data were collected by a Stoll-Hardy Model HL4 unfiltered radiometer with a 3-25 micron response. They are in error to an unknown amount due to reflected solar energy; therefore, the emissivity values have relative merit only.

# GROUND TRUTH SURVEY

SITE NO. VII

MOTOR POOL

NAVAL STATION

SAN DIEGO CALIFORNIA

STATINTL

STATINTL

SITE NUMBER VII

Site Number VII satisfied program requirements for a military motor pool. The site is located at U. S. Naval Station near 32nd Street and U. S. 101, San Diego, California.

[redacted] ground data collection team consisted of [redacted]. Their duties included collecting thermodynamic and radiometric temperatures from selected stations, meteorologic, photographic, activity, and Munsell color data. Their basic equipment consisted of a [redacted] ground truth kit and communication equipment described in the final project report.

Target sub-units monitored include automobiles, 1/2-ton to 5-ton trucks and busses. Activity in this area was concentrated during daylight hours, Monday through Friday, with very little weekend activity.

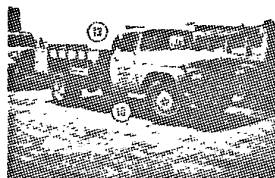
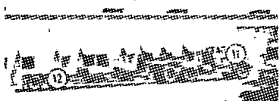
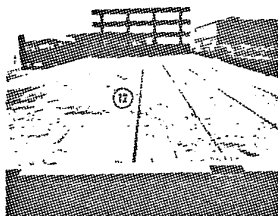
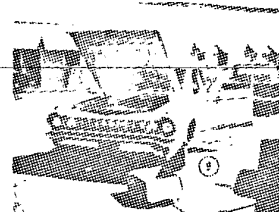
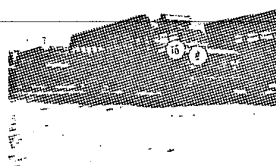
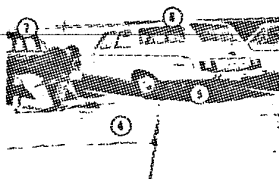
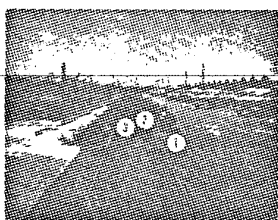
STATINTL

### TEMPERATURE STATIONS

<u>STATION NO.</u>	<u>DESCRIPTION</u>
1	Asphalt Near Railroad Bed
2	Railroad Track (Iron) Exposed to Sky
3	Dirt in Railroad Bed
4	Concrete - Exposed to Sky
5	Concrete - Under Car
6	Top of Gray Sedan
7	Top of Black Sedan
8	Hood of Bus
9	Asphalt - Exposed to Sky
10	Asphalt - Under Truck
11	Hood of Truck
12	Wood Truck Bed
13	Top of Water Truck Tank
14	Concrete Next to Building
15	Composition Roof of Building
16	Hood of Bus Upon Arrival
17	Water From Steam Washing on Concrete



## TEMPERATURE STATION IDENTIFICATION



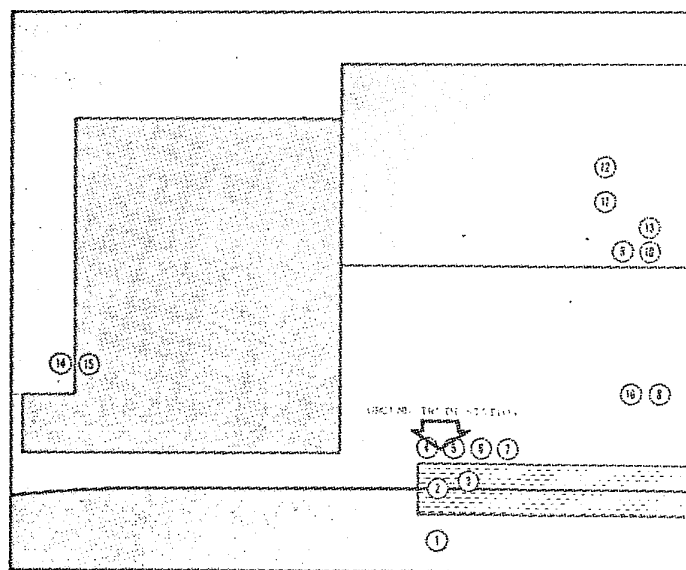


TEMPERATURE STATIONS  
LOCATION SHEET  
FIRST SURFACE MAP



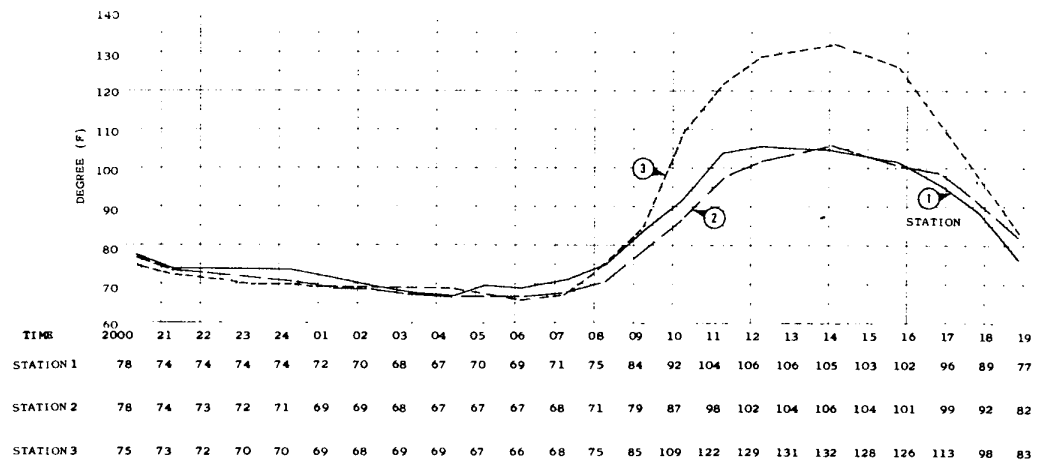
LEGEND

- BLACK TOP
- CONCRETE
- SOIL

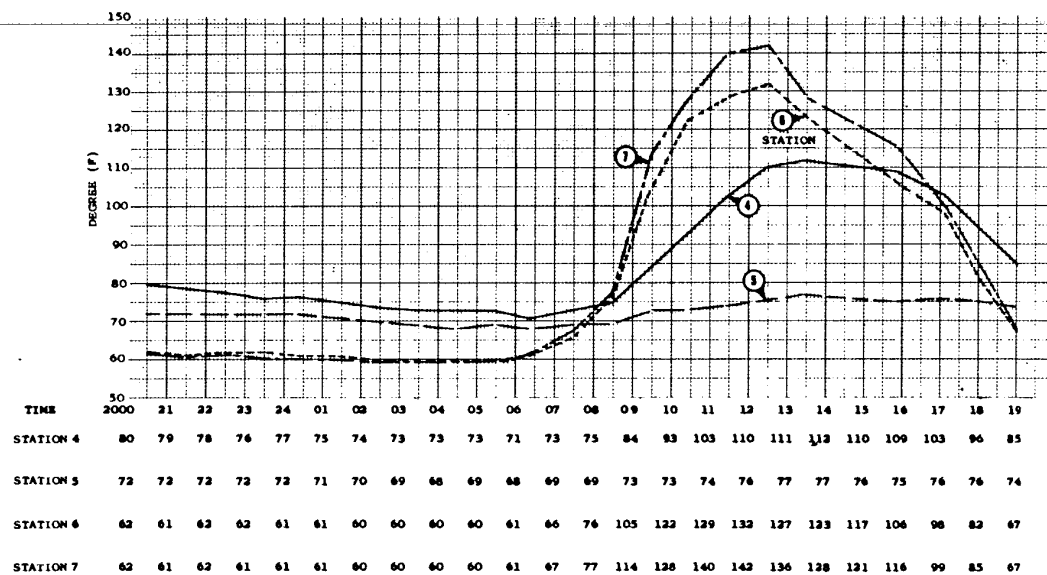


## 24 HOUR TEMPERATURE DATA

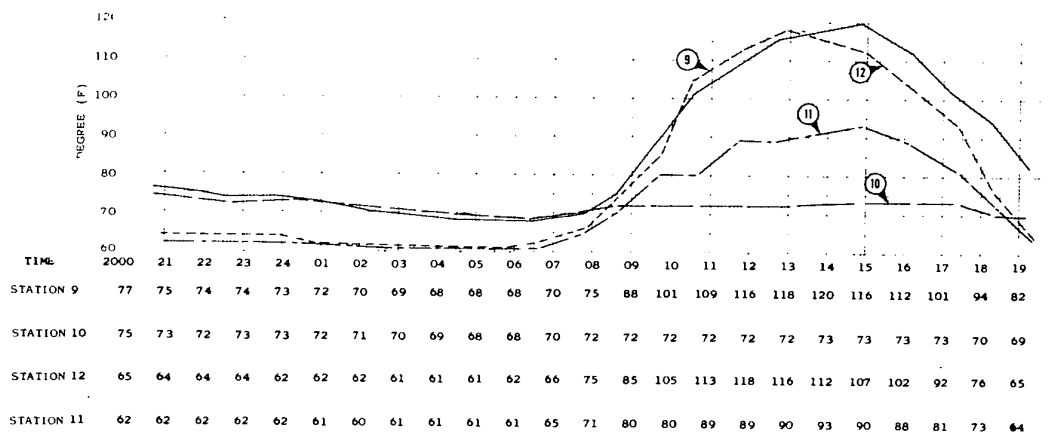
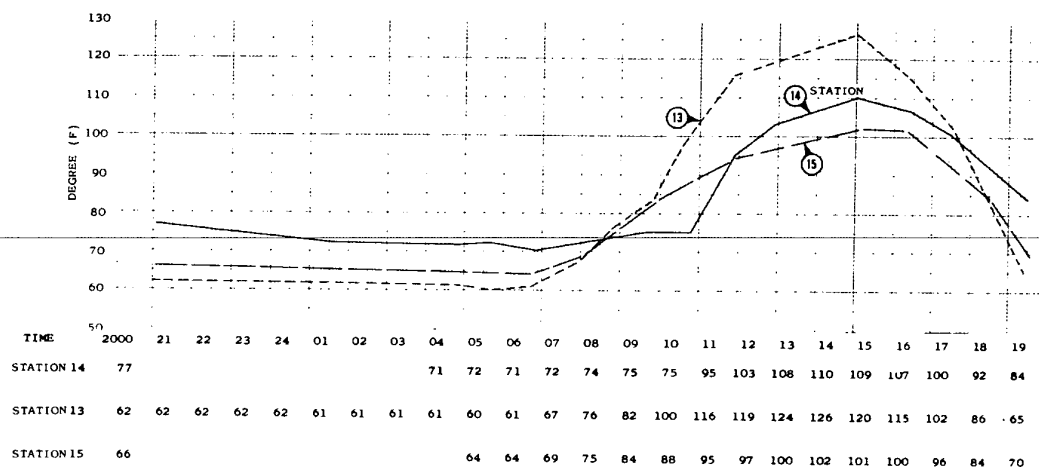
ALL TIMES P D T  
JUNE 25, 1964



## 24 HOUR TEMPERATURE DATA



## 24 HOUR TEMPERATURE DATA



## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 6/26/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1122	105	106	132	112	77	123	128	114	120	73	93	112	126	110	102				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%	VIS.	TYPE										
		1347	71	63	64	WNW	8		1/10	10	CN	H									
FLIGHT NO. 2 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1111	68	68	67	75	71	58	58	60	68	65	58	61	59	73	60				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%	VIS.	TYPE										
		1028	61.5	59.5	89	WSW	3		8/10	5	H										
FLIGHT NO. 3 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1010	113	107	132	109	73	128	131	100	120	70	93	112	120	113	111		147	93	
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%	VIS.	TYPE										
		1011	66	61	75	SNW	6		1/10	15	H										
FLIGHT NO. 4 6/27/64	STATION TEMPERATURES	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2043	70	74	70	78	70	58	58	60	73	68	59	62	58	79	66		143	56	
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%	VIS.	TYPE										
		2208	64.5	60	77	CALM			2/10	8	H										

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 1 027704	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1038	102	95	115	101	73	131	139	112	107	73	98	122	115	97	103				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%		VIS.		TYPE								
		19	67.8	62.8	76	S	5		0/10		15										
FLIGHT NO. 2 028704	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		0000 0120	68	71	68	71	70	52	51	56	68	67	56	57	56	76	62				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%		VIS.		TYPE								
		21	72	60	83		CALM		0/10		5 H										
FLIGHT NO. 3 029704	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		0000 0100	98	98	119	100	72	127	128	114	112	71	85	102	108	98	99				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%		VIS.		TYPE								
		40	69	62	67	Nw	13		1/10		10 H										
FLIGHT NO. 4 030704	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		7	70	72	71	71	72	56	56	61	70	69	60	64	58	76	64				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
			DRY	WET	HUM.	DIR.	VEL.		%		VIS.		TYPE								
		014	64	61.5	82		CALM		0/10		15										

## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 9 6/30/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			110	104	127	109	77	130	139	108	115	85	94	107	126	106	105				
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE						
			72	61.5		55	WNW 8		0/10		15		H								

FLIGHT NO. 10 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			111	69	67	63	72	72	65	54	85	68	74	58	60	56	72	60	59		
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE						
			17	63	60.5		87	CALM		0/10		15									

FLIGHT NO. 11 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			1227	100	100	123	103	76	124	134	10*	117	75	99	96	122	90	101			
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE						
			1200	70	62		64	WNW 5		0/10		15									

FLIGHT NO. 12 7/1/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
			1106	75	74	71	78	73	57	56	63	74	71	63	64	59	70	65			
	WEATHER	TIME	TEMP.		REL. HUM.		WIND DIR. VEL.		CLOUD %		MAX. VIS.		CLOUD TYPE		BASE						
			2252	64	60		79	CALM		0/10		12									



## METEOROLOGY DURING OVERFLIGHTS

FLIGHT NO. 13 7/2/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1505	108	108	126	109	79	124	130	109	117	79	109	92	124	110	107				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		1429	75		65	58	WNW	9		0/10	12	H									
FLIGHT NO. 14 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		0229	70	67	64	73	72	53	52	59	66	69		60	56	69	58				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		0320	62.5		60	87		CALM		0/10	15										
FLIGHT NO. 15 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		1533	105	107	123	113	76	113	121	100	116	78	96	108	112	106	100				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		1620	73		64	61	W	10		0/10	15										
FLIGHT NO. 16 7/3/64	STATION TEMPERATURE	TIME	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
		2116	72	74	70	76	73	57	56	60	72	70	60	64	58	75	64				
	WEATHER	TIME	TEMP.		REL.		WIND		CLOUD		MAX.		CLOUD		BASE						
		2155	64		60.5	82	W	4		0/10	15										

## SITE VII

## Periods of Activity

## Week Days

0700-0930	Personnel buses and other assorted vehicles leave for work
0930	Most personnel buses returned to motor boat
1600-1700	Personnel buses out and return with other vehicles at end of work day
1700-0700	2 Personnel buses making rounds

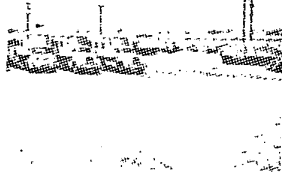
## SITE VII.

A	Flight 1; Time 1400; June 26, 1964
B	Flight 1; Time 1400; June 26, 1964
C	Flight 1; Time 1400; June 26, 1964
D	Flight 3; Time 1300; June 27, 1964
E	Flight 3; Time 1300; June 27, 1964
F	Flight 7; Time 1300; June 29, 1964
G	Flight 7; Time 1300; June 29, 1964
H	Flight 7; Time 1300; June 29, 1964
I	Flight 7; Time 1300; June 29, 1964
J	Flight 8; Time 2230; June 29, 1964
K	Flight 8; Time 2230; June 29, 1964
L	Flight 8; Time 2230; June 29, 1964
M	Flight 8; Time 2230; June 29, 1964
N	Flight 8; Time 2230; June 29, 1964
O	Flight 8; Time 2230; June 29, 1964

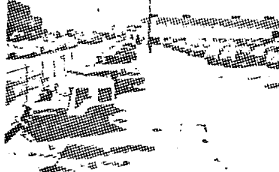
## DAILY ACTIVITY LOG



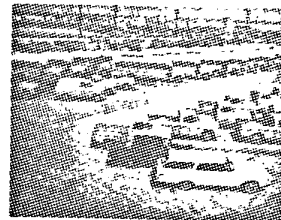
A



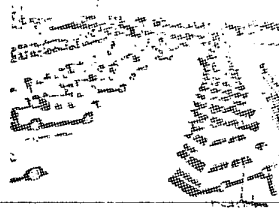
B



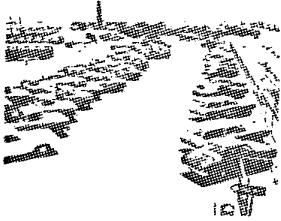
C



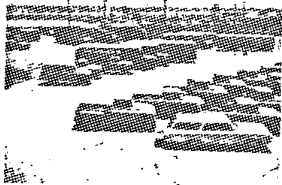
D



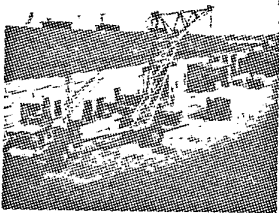
E



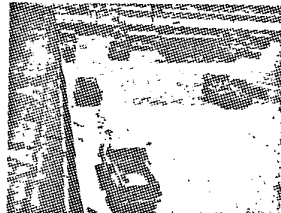
F



G



H



I



J



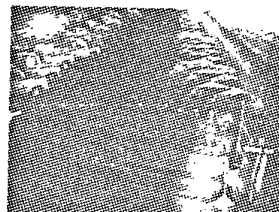
K



L



M



N

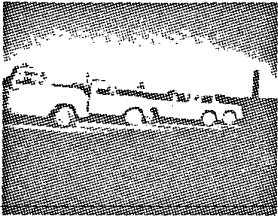


O

SITE VII.

A	Flight	8; Time	2230; June 29, 1964
B	Flight	9; Time	1330; June 30, 1964
C	Flight	9; Time	1330; June 30, 1964
D	Flight	9; Time	1330; June 30, 1964
E	Flight	9; Time	1330; June 30, 1964
F	Flight	9; Time	1330; June 30, 1964
G	Flight	9; Time	1330; June 30, 1964
H	Flight	9; Time	1330; June 30, 1964
I	Flight	9; Time	1330; June 30, 1964
J	Flight	10; Time	0130; July 1, 1964
K	Flight	10; Time	0130; July 1, 1964
L	Flight	10; Time	0130; July 1, 1964
M	Flight	10; Time	0130; July 1, 1964
N	Flight	10; Time	0130; July 1, 1964
O	Flight	10; Time	0130; July 1, 1964

## DAILY ACTIVITY LOG



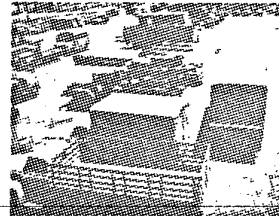
A



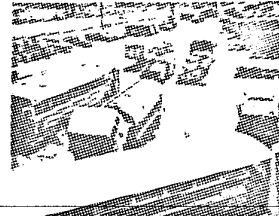
B



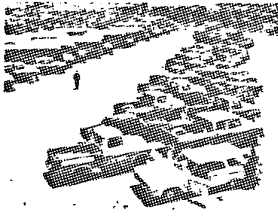
C



D



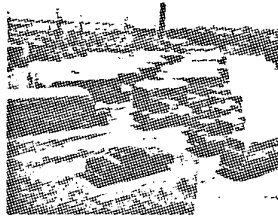
E



F



G



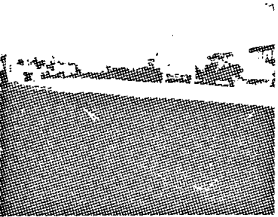
H



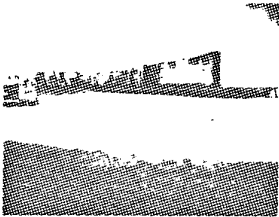
I



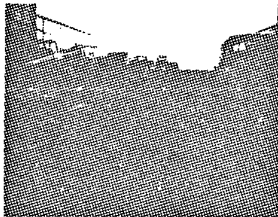
J



K



L



M



N

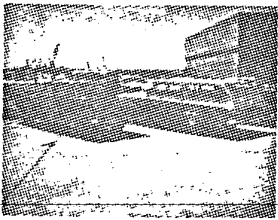


O

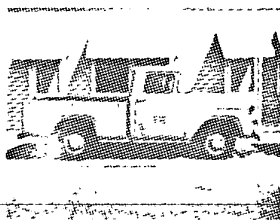
SITE VII.

A Flight 9; Time 1245; June 30, 1964  
B  
C  
D Flight 9; Time 1245; June 30, 1964  
E Flight 9; Time 1245; June 30, 1964  
F  
G  
H Flight 15; July 3, 1964  
I  
J  
K Flight 11; Time 12:30; July 1, 1964  
L Flight 11; Time 12:25; July 1, 1964  
M Flight 11; Time 12:00; July 1, 1964  
N Flight 11; Time 12:30; July 1, 1964  
O Flight 11; Time 12:30; July 1, 1964

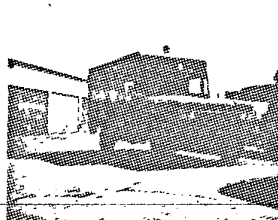
## DAILY ACTIVITY LOG



A



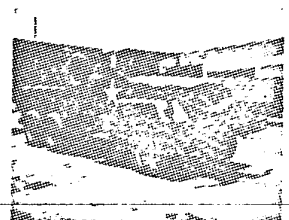
B



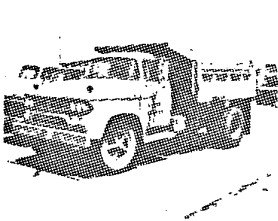
C



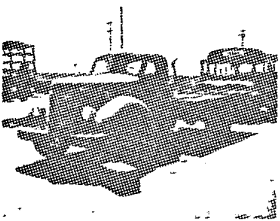
D



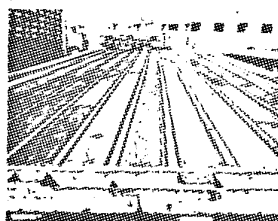
E



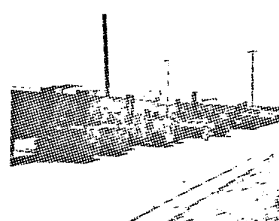
F



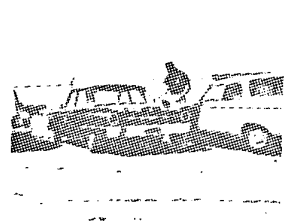
G



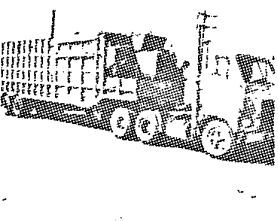
H



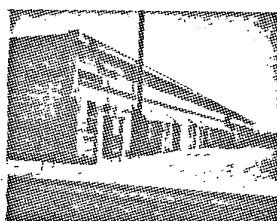
I



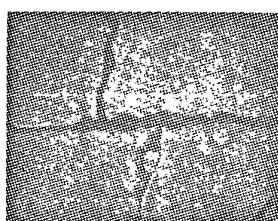
J



K



L



M



N



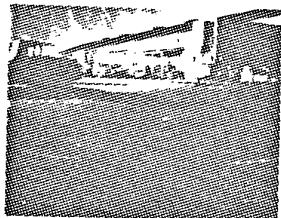
O

SITE VII.

A Flight 10: Time 0130; July 1, 1964  
~~B Flight 10: Time 0130; July 1, 1964~~  
C Flight 10: Time 0130; July 1, 1964  
D Flight 11: Time 1200; July 1, 1964  
E Flight 11: Time 1200; July 1, 1964  
F Flight 11: Time 1200; July 1, 1964  
G Flight 11: Time 1200; July 1, 1964  
H Flight 11: Time 1200; July 1, 1964  
I Flight 11: Time 1200; July 1, 1964  
J Flight 11: Time 1200; July 1, 1964  
K Flight 12: Time 2230; July 1, 1964  
L Flight 12: Time 2230; July 1, 1964  
M Flight 12: Time 2230; July 1, 1964  
N Flight 12: Time 2230; July 1, 1964  
O Flight 12: Time 2230; July 1, 1964



## DAILY ACTIVITY LOG



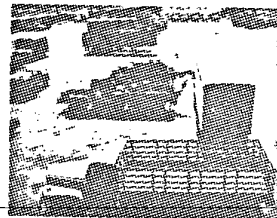
A



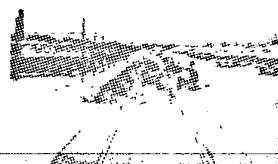
B



C



D



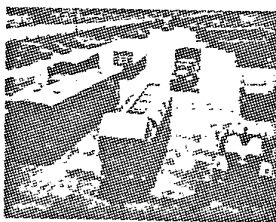
E



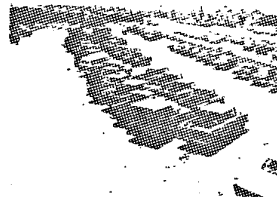
F



G



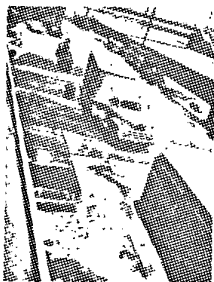
H



I



J



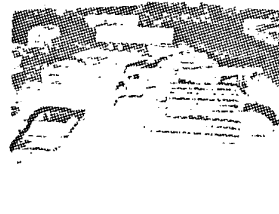
K



L



M



N

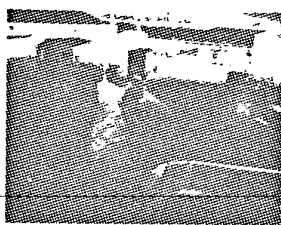


O

SIT VII.

A	Flight 12; July 1, 1964
B	Flight 12; July 1, 1964
C	Flight 13; July 2, 1964
D	Flight 13; July 2, 1964
E	Flight 13; July 2, 1964
F	Flight 13; July 2, 1964
G	Flight 13; July 2, 1964
H	Flight 13; July 2, 1964
I	Flight 13; July 2, 1964
J	Flight 13; July 2, 1964
K	Flight 14; July 3, 1964
L	Flight 14; July 3, 1964
M	Flight 14; July 3, 1964
N	Flight 14; July 3, 1964
O	Flight 14; July 3, 1964

## DAILY ACTIVITY LOG



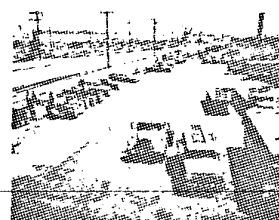
A



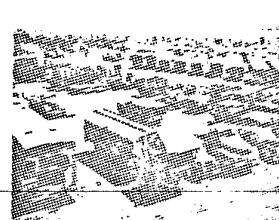
B



C



D



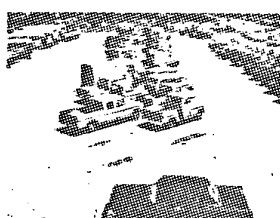
E



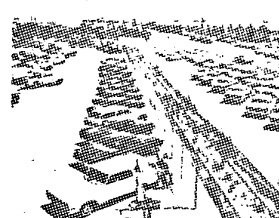
F



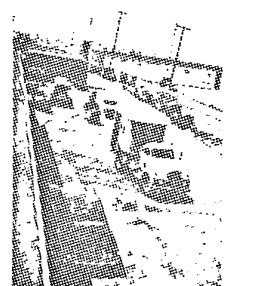
G



H



I



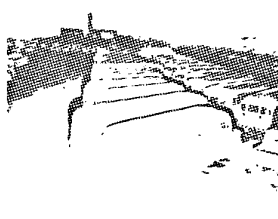
J



K



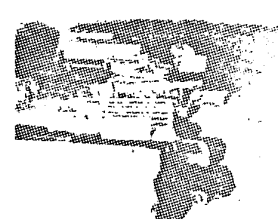
L



M



N



O

SITE VII.

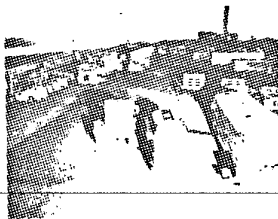
A Flight 14; July 3, 1964  
B Flight 14; July 3, 1964  
C Flight 14; July 3, 1964  
D Flight 13; July 3, 1964  
E Flight 13; July 3, 1964  
F Flight 15; July 3, 1964  
G Flight 15; July 3, 1964  
H Flight 15; July 3, 1964  
I Flight 15; July 3, 1964  
J Flight 15; July 3, 1964  
K Flight 15; July 3, 1964  
L Flight 15; July 3, 1964  
M Flight 15; July 3, 1964  
N Flight 15; July 3, 1964  
O Flight 15; July 3, 1964

5 c 4

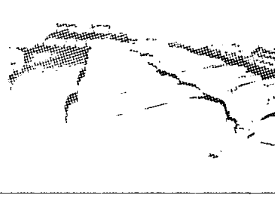
## DAILY ACTIVITY LOG



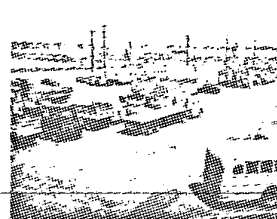
A



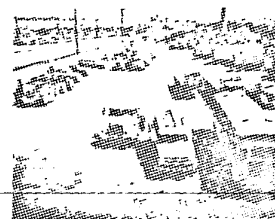
B



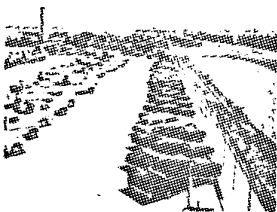
C



D



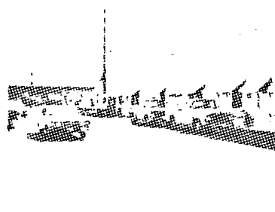
E



F



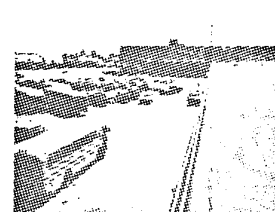
G



H



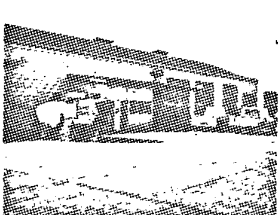
I



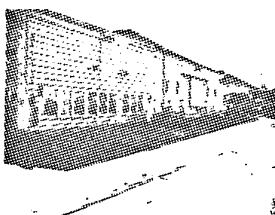
J



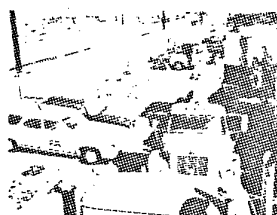
K



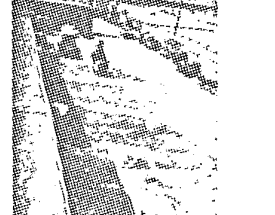
L



M

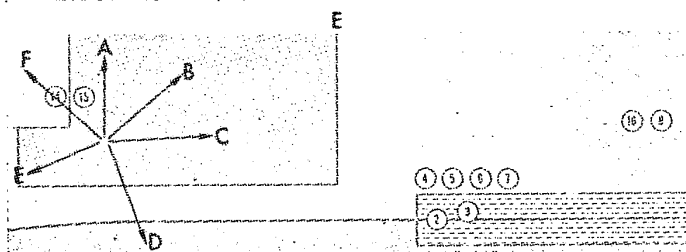
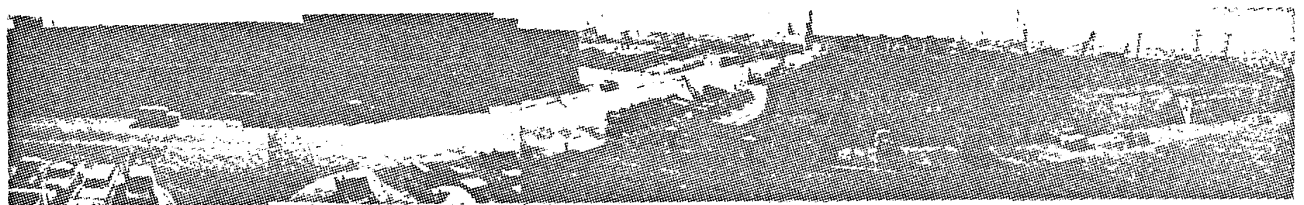


N

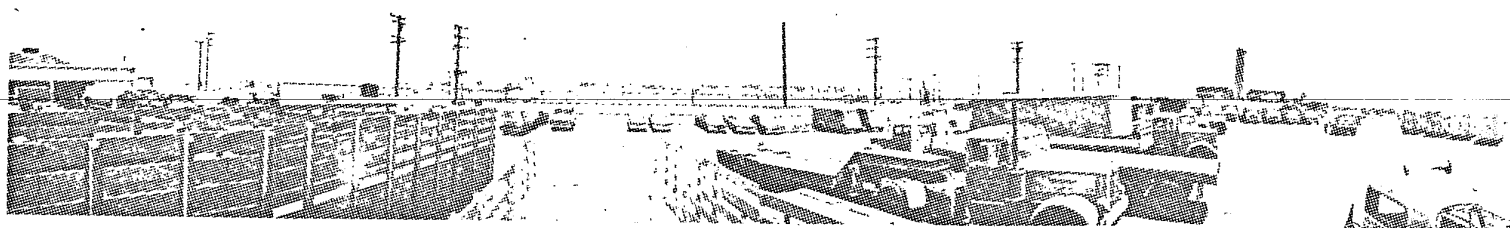


O

# 360° PANORAMIC



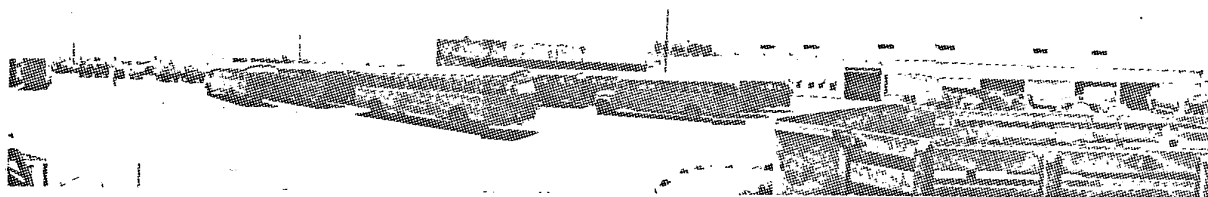
### 360° PANORAMIC



A

B

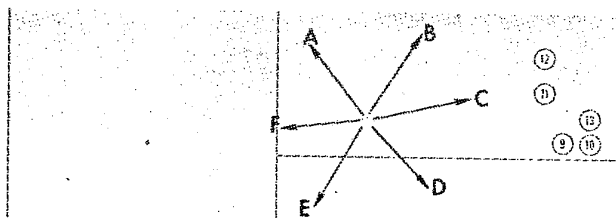
C



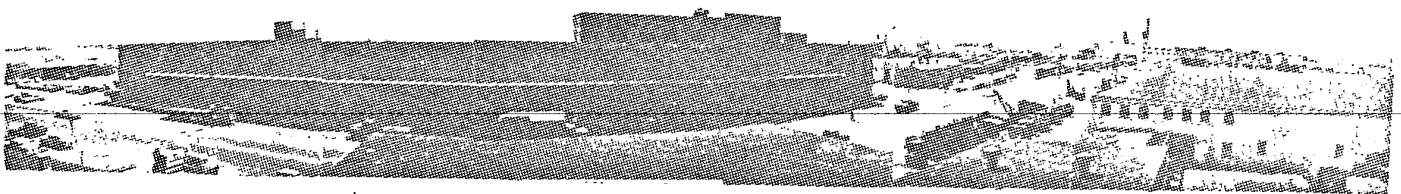
D

E

F



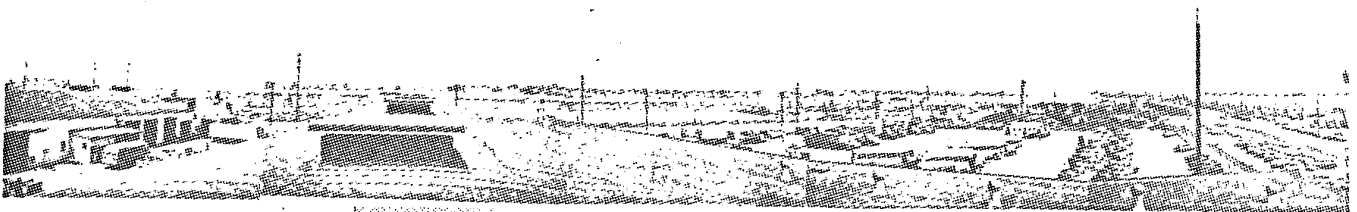
# 360° PANORAMIC



A

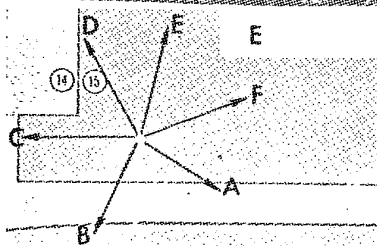
B

C



D

F



4 5 6 7

2 3

16 8



## UNCALIBRATED RADIOMETRIC DATA\*

SITE #7

Temperature Station	Thermodynamic Temperature ( $T_T$ )	Radiometric Temperature ( $T_R$ )	Relative Emissivity ( $E_p$ )**	SUNRISE & SUNSET (PDT)		
1 Asphalt Near RR Bed	35.0 °C	32.5 °C	0.968			
2 RR Track	35.0	30.2	0.937			
2 RR Track	36.0	31.5	0.940			
3 Dirt Between RR Track	46.0	40.0	0.925			
4 Concrete in Sun	34.0	31.3	0.964			
6 Top of Gray Sedan	32.5	29.0	0.956	JUNE	SUNRISE	SUNSET
7 Top of Black Sedan	46.0	41.0	0.937			
12 Wood on Lowboy Truck	43.0	39.0	0.949	24	5:42	8:00
13 Top of Water				25	5:42	8:00
Truck Tank	35.0	31.7	0.956	26	5:42	8:00
14 Concrete	44.0	38.5	0.933	27	5:43	8:00
15 Composition Roof	45.5	44.0	0.980	28	5:43	8:01
-- Green Composition Roof				29	5:43	8:01
-- Green Composition Roof	36.0	36.5	1.008	30	5:44	8:01
-- Green Composition Roof	47.0	46.0	0.988	JULY		
-- Asphalt in Sun	38.5	36.0	0.968	1	5:44	8:01
-- Concrete in Sun	38.0	33.7	0.948	2	5:45	8:00
-- Glossy Gray Car	59.0	47.0	0.908	3	5:45	8:00
-- Glossy Black Car	58.0	51.7	0.925	4	5:45	8:00
-- Gray Car	45.0	40.0	0.937			
-- Dirty Gray Car	47.0	32.0	0.937			
-- Asphalt Composition Roof	45.5	44.0	0.980			

\*\*  $E_p = \frac{T_R}{T_T}$ , where  $T_R$  = Radiometric Temperature  
 $T_T$  = Thermodynamic Temperature

\* Radiometric data were collected by a Spillhardt Model RH-4 unfiltered radiometer with a 3-25 micron response. They are in error by an unknown amount due to reflected solar energy. Therefore, the emissivity values have been corrected only.

## METEOROLOGICAL DATA

U. S. WEATHER BUREAU, SAN DIEGO, CALIFORNIA

DATE	TIME	TEMPERATURE		REL. HUM.	WIND		MAX. VIS.	%	CLOUDS BASE	TYPE	REMARKS
		DRY	WET		DIR.	VEL.					
6/25/64	1200	70 <sup>10</sup> F	63 <sup>0</sup> F	68 <sup>7</sup>	WNW	10	5 H	0/10			CU SE
	1300	71	64	68	WNW	10	5 H	0/10			CU SE
	1400	70	63	68	WSW	8	5 H	0/10			CU E
	1500	69	63	72	WSW	5	5 H	0/10			ST OFF SHORE
	1600	67	62	75	SW	8	4 H	0/10			AC SW
	1700	65	61.5	77	W	6	3 H	1/10	1000		
	1800	63	60	84	W	7	3 H	10/10	M900		
	1900	62	59.5	86	W	8	3 H	10/10	M700		
	2000	62	59.5	86	NW	8	3 H	10/10	M700		
	2100	61	59	89	WNW	5	3 F	10/10	M600		
	2200	61	59	89		0	3 F	10/10	M600		
	2300	61	59	89		0	3 F	10/10	M600		
6/26/64	0000	61	59	89	W	6	3 F	10/10	M700		
	0100	61	59	89	NW	6	3 F	10/10	M600		
	0200	61	59	89	NW	5	3 F	10/10	M700		
	0300	61	59	89	NW	7	3 F	10/10	M600		
	0400	61	59	89	NW	5	2-1/2 F	10/10	M600		
	0500	61	59	89	NNW	5	3 F	10/10	M700		
	0700	64	61.5	82	WNW	6	4 H	10/10	M1000		
	0800	66	61	75	W	6	5 H	10/10	1100		SUN VSB
	0900	67	61.5	73	W	8	7	1/10	1300		
	1000	68	62.5	69	NW	11	10	1/10	1300		
	1100	69	61.5	65	W	10	10	0/10			FEW ST
	FLIGHT 1	1200	70	62	64	W	10	10	0/10		
1300		71	63	64	NW	11	10	0/10			CB SE
1400		70	62.5	66	WNW	10	10	0/10			
1500		68	61	67	WNW	9	8	0/10			
6/27/64	FLIGHT 2	0100	61	58.5	86	WSW	4	5 H	10/10	M800	
	FLIGHT 3	1300	70	62.5	66	WSW	9	6 H	0/10		
		1400	70	62.5	66	WNW	7	6 H	0/10		CU E
		1500	68	61	68	NW	10	5 H	0/10		ST W
		1600	68	62	71	WNW	10	5 H	0/10		
2000	63	60	84	NW	6	5 H	1/10	1000			
FLIGHT 4	2100	62	59.5	86	NW	6	5 H	1/10	1000		
	2200	62	59	84	N	4	5 H	0/10			
	2300	62	59	84	NNW	3	5 H	0/10			
6/28/64	FLIGHT 5	0900	71	63	64	WNW	6	7	0/10		ST ALONG SHORE
	1000	70	62.5	66	NW	10	8	0/10			ST ALONG SHORE
	1100	71	62.5	62	WNW	8	10	0/10			
	1200	72	62.5	59	NW	13	12	0/10			
	2100	62	59.5	86	NNW	7	8	0/10			
	2200	61	58.5	86	NW	6	8	1/10	M700		
FLIGHT 6	2300	60	58	89	N	5	6 H	9/10	M600		
6/29/64	FLIGHT 7	1100	72	62	57	NW	13	8	0/10		
	1200	73	62.5	55	NW	12	10	0/10			
	1300	73	62.5	55	NW	10	10	0/10			
	2100	63	60	84	N	5	10	0/10			
	2200	61	58.5	86	NNW	4	8	0/10			
FLIGHT 8	2300	61	57.5	81	NNE	4	8	0/10			

METEOROLOGICAL DATA (CONT'D)											
DATE	TIME	TEMPERATURE		REL. HUM.	WIND		MAX. VIS.	%	CLOUDS BASE	TYPE	REMARKS
		DRY	WET		DIR.	VEL.					
6/30/64											
FLIGHT 9	0000	61 <sup>11</sup>	57 <sup>0</sup>	78 <sup>5</sup>	NNE	5	10	0/10			
	1200	73	63	57	NW	12	20	0/10			
	1300	73	63.5	53	NW	12	20	0/10			
	1400	73	62.5	55	NW	9	15	0/10			
	2300	61	59	89	NNW	4	8	0/10			
7/1/64											
FLIGHT 10	0000	61	59	89	NNE	4	8	0/10			
	0100	61	59	89	N	5	8	9/10	M600		
	0200	61	58.5	86	N	6	8	9/10	M800		
	0300	61	58	84	N	4	8	9/10	M900		
	1100	72	62	57	NW	10	8	0/10			
FLIGHT 11	1200	74	62	50	N	6	8	0/10			
	1300	73	63	57	NW	9	8	0/10			
	2000	63	60	84	NNW	5	10	0/10			
	2100	62	59.5	86	N	5	10	0/10			
FLIGHT 12	2200	62	59.5	86	NW	6	10	0/10			
	2300	61	58.5	86	NW	5	10	0/10			
7/2/64											
FLIGHT 13	0000	61	58	84	N	4	8	0/10			
	1300	78	63.5	44	WNW	10	15	0/10			
	1400	76	63	48	WNW	12	15	0/10			
	1600	73	62	53	WNW	12	20	0/10			
7/3/64											
FLIGHT 14	0100	62	59.5	86	NNE	5	8	0/10			
	0200	61	59.5	92	N	6	3 F	10/10			
	0300	63	61.5	87	N	7	3 F	10/10	M600		
	0400	62	59.5	86	NNE	6	3 F	10/10	M600		
FLIGHT 15	1400	71	63	64	WNW	13	12	0/10			ST OFF SHORE
	1500	70	62.5	66	NW	12	15	0/10			ST OFF SHORE
	1600	68	61	68	NW	11	12	0/10			ST OFF SHORE
	1700	67	62	75	NW	10	12	0/10			ST W
FLIGHT 16	2100	63	59.5	82	WNW	6	8	1/10	1200		
	2300	62	59	84	NW	4	10	9/10	M1200		